TEXTILE READER'S GUIDE

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TEXTILE TECHNOLOGY DIGEST is published monthly by the Institute of Textile Technology, Charlottesville, Virginia. In preparing these abstracts, the editorial staff seeks to report correctly the contents of the original papers without reflecting the views of the staff or the members of the Institute. Printed in the U. S. A.

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(An explanation of the classification used in the DIGEST was published in the January (1949) issue (Vol. 6, No. 1) on the page facing the Index to Authors.)

Subscriptions are available to Non-members of the Institute. The rate is $25.00 per year.

Advertising rates are available upon request.

Abstracts

[944]

FIBERS A

Natural Fibers A 1

Georgia-South Carolina cotton buyers consider problems

Anon. *Textile Industries 116,* 116 (May 1952).

The Joint Annual Meeting recently adopted the resolution that the ginning operation be carefully studied by all segments of the industry to insure the maintenance of the inherent qualities of the cotton fiber. Recommendations were made to regulate the practices in bailing and shipping.

Moisture relations of textile fibers at high humidities

D. K. Ashpole. *Proc. of Royal Soc. 212,* 112-23 (April 8, 1952).

The present work describes sorption experiments carried out at relative humidities above 98.0%. The experimental results show that in this range the sorptive capacity of textile fibers for moisture is very high. At saturation there is no true equilibrium but the immediate saturation regain is close to the moisture imbibition obtained from standard centrifuging. Earlier results are shown to give low values of saturation regain because of unfavorable conditions for mass transfer of moisture and inadequate temperature control.

Non-felting wool and wool mixtures

Anon. *The Textile Weekly,* 1415 (May 23, 1952).

See front section

Textile Institute told of Govt. blend studies

J. W. Cohn, *Daily News Record,* 23 (June 9, 1952).

See front section

The great adventure of fiber structure

Anon. *Textile Weekly,* 1338 (May 16, 1952).

See front section

Upgrading medium and low-grade cottons

Anon. *The Textile Manufacturer,* 237-238 (May 1952).

See front section

Viscosity measurements

Julia H. Crow and Carl M. Conrad. *Textile Industries 116,* 110-111 (May 1952).

The viscosity measurement aids the manufacturer by disclosing fiber damage caused by weather, sunlight, bleaching, mercerization, dyeing, mildew, heat, smoke, etc. Fabric merchandisers use it to discover latent damage which otherwise would not be detected for weeks or months.

The procedure for viscosity measurement, generally is to have cellulose dissolved in a solvent (chemists look upon cotton as composed principally of cellulose). The solution then is forced, or allowed to flow under its own weight, through tiny glass capillary tubes in a viscometer, to determine its rate of flow. A slow rate, when the solution is thick and sirupy, indicates very high quality cellulose, or cotton practically undamaged. A fast rate, where the solution is quite thin and limpid, indicates low quality cellulose, or cotton damaged considerably.

Until recently, cuprammonium hydroxide had almost always been used to dissolve the cellulose. Now, cupraethylene diamine has replaced cuprammonium hydroxide. In 1947 the American Society for Testing Materials adopted the cupri-ethylene-diamine method for the measurement of cellulose viscosity. Furthermore, a "modified nitrocellulose fluidity method" which supplements the cupri-ethylene-diamine method was adopted at a recent meeting of the American Society for Testing Materials.

Wool Bureau's Research Seminar at Lowell

Staff. *Textile Industries 116,* 122-125 (May 1952).

The three highly significant findings of the project are:

1. All wools of the same fiber diameter are basically similar, both physically and chemically, regardless of geographical source.
2. Periods of rest to overcome fatigue resulting from different conversion processes reduce breakage and thus improve spinning and weaving qualities.
3. Yarns spun from medium wools were found after dyeing to have darker shade than those of fine wools dyed under the same conditions.

Essentially, the Textile Industries' report of the Seminar is the following:

1. Crimp level is an important factor in aging, after the making of top, roving, and yarn.

2. Chemical composition of four wools gathered from separated parts of the world were similar.

3. On basis of unit cross-sectional area, four master wools were similar in basic physical properties.

4. Weaving efficiency increases when yarn is aged three weeks prior to weaving.

5. Raw wool scoured to 0.25% free fat content behaves excellently in combing and spinning.

6. Approximately 40 fibers per yarn cross section represent a lower limit for economical spinning on a French worsted yarn.

7. Susceptibility of wool fibers to surface dye or stain progresses gradually and increases through principal worsted operation up to time yarn is spun.

8. Fabrics made from finer grades of wool dye lighter shades than fabrics made from medium grades dyed under similar conditions.

(Report of this meeting will be continued in next issue.)

Artificial fibers A 2

A 50-50 Vicara-nylon blend spins well

Staff. *Textile Industries 116* (May 1952).

Spinning a 50-50 vicara-nylon blend on the Bradford system was found to be no more problem than an all wool mix. Besides, the blended yarn combines the virtues of both components. Nylon adds strength and abraison resistance and absorptiveness, softness, and drape are imparted by Vicara. Both fibers won't felt or shrink in laundering, thus yielding good dimensional stability. They are also moth and mildew resistant.

The production formula for the blend is the following:

1. Thorough blending of tops in gilling.
2. Not more than ½ turn of twist per foot in gilling.
3. Low twist in drawing, reducing, and roving.
4. Ratch settings not more than 1" over staple length.
5. Light tensions from gilling through spinning.
6. A draft of approximately 6 in all operations.

Ardil: Properties and uses

Anon. *Textile Age 22,* 24, 25 (June 1952).

In appearance, Ardil the synthetic protein fiber is a cream colored, crimped fiber with a soft wool-like handle, with a tensile strength of 10 kg./mm. and elongation at break, 50% — 100%. Ardil is always hardened in acid-salt-formaldehyde under no tension. Because of this treatment no matter what previous stretch is given to the fiber it attains a high degree of dimensional

stability. The absorptive capacity of Ardil for water is of the same order as that of wool but rather higher.

Ardil does not felt in the manner common to wool and fur. Nevertheless synthetic protein fibers show another type of felting. This is due to the properties of synthetic fibers of "welding" or "sticking" when held in contact under heat and pressure. This property is useful in hat making. A small quantity of casein is said to give a very desirable reinforcement in felt hats and is being used in America. Wear tests have been carried out on a series of fabrics containing Ardil.

Mothproofness experiments have shown that Ardil is mothproof. The new fiber has an affinity for dyestuffs normally used in dyeing other protein fibers. Since its physical structure is not identical with the naturally occurring protein fibers such as silk and wool, it does not possess the same dyeing properties as either of these fibers but its own individual characteristics, which are intermediate between the two. Its behavior towards acid dyestuffs closely resembles but is not identical with that of chlorinated wool. It has an increased rate of dyestuff uptake and the dyeings obtained have a reduced wet fastness compared with the same dyestuff on normal wool.

Crimping of rayon staple

Walter Frenzel. *Faserforsch u. Textiltech 2*, No. 10, 383-90 (1951); Brit. Cotton Ind. Res. Assoc. *32*, 387 (1952).

Crimp or spiral formation in a fiber assists considerably in the spinning operation, and though, in the case of artificially induced crimp in rayon staple, it may have disappeared completely at the end of the spinning process it will have served its purpose by counteracting excessive tension. After briefly discussing methods of inserting crimp the article deals with the form of the crimp, its behavior during processing, its stability, its mechanical properties, and methods of determining the degree of crimpiness. There are twenty-six references to the literature.

Evaluating a new fiber

Simon Williams, *Rayon and Synthetic Textiles 31*, 58-9 (June 1952).

See front section

Spun dyed Fibro is on the way

Harold Ashton, *Textile Bulletin 66*, 68, 70 (May 1952).

See front section

Synthetic fiber yarn manufacturing discussed by South Carolina S. T. A.

Anon. *Textile Bulletin 63*, 64, 65 (May 1952).

See front section

YARN PRODUCTION B

Fiber preparation B 1

Better cutting of thread waste with new machine

Anon. *Textile Industries 116*, 161 (May 1952).

A machine to meet the problems of cutting the new synthetics and other thread wastes was recently announced. The cutting is by shearing action, the manufacturer states, assuring clean, even results. Mfr: Taylor, Styles & Company.

Picker pulverizes hard wool tags

Anon. *Textile Industries 116*, 159 (May 1952).

A picker that is said to be most effective in the preparation of wool tags for scouring is the Model "E" Special. Little breakage or loss of fiber is experienced, even when pulverizing and combing out the hardest of tags, it is reported. Mfg: Mudrick Machine Works.

Wool blending begins at the opening room

Staff. *Textile Industries 116*, 99 (May 1952).

Variations in yarn color or texture are more readily apparent in pile floor coverings than in most other textiles, and variations are more likely to occur on account that a mix for carpet yarns may be composed of as many as 10 or 15 different wool types in addition to a percentage of synthetics. For excellent spinning and dyeing, either stock or skein, blending must begin in the opening room where the first blending to obtain uniform distribution of fibers throughout the final spun yarn is started. Good blending depends much on the operator. As to insure against faulty blending at the Alexander Smith plant, a placard showing the correct and only authorized feeding technique is mounted above the feed table on each opener in full view of the operator. A sandwich formation of the various components of the blend is the reccommended way of loading the feed apron.

Carding and Combing B 2

High licker-in speed permits 40% increase in card production

E. A. Bentley. *Textile Industries 116*, 100-103 (May 1952).

High production on cards is possible through increased licker-in speed. Results have been

checked (since June 1951) on cards employing licker-in speeds ranging from 685 rpm to 795 rpm, and the work has shown better breaking strength and less sliver variation. The number of neps per grain was also reduced noticeably.

9,000,000 lb. of cotton have been processed through the test cards to the present date. Card production may be increased as much as 40% without any increase in neps. If the low production rate is maintained but at a higher licker-in speed, the neps may be reduced by as much as 10 to 12%.

On an overall basis, an increase of 275 rpm in licker-in speed and altered card settings produced carded stock, drawing sliver, and yarn with less variation, an increase of 4.5 pounds in breaking strength, and a decrease of 3.6 neps per grain. Overall variation in yarn on 10s low grade was 109.6% at 517 rpm licker-in speed, and 105.5% at 795 rpm licker-in speed.

There is given a list of the changes which must be made on the card in order to operate at a higher licker-in speed.

Upgrade medium and low-grade cottons

Textile Manufacturer, 237-238 (May 1952).

See front section.

Spinning B 4

Cop-type bobbin and package wound thereon

Edouard Roatta and Albert Peyssonneaux (to Textile and Chemical Research Company Limited) USP 2,591,295, April 1, 1952.

A yarn package comprising a bobbin having a cylindrical barrel with symmetrical frusto conical and portions together extending over from one-haf to two-thirds of the total bobbin height, and a winding thereon comprising layers of yarn, each layer having an amplitude at least 50% greater than that of a frusto conical end portion, the layers being progressively offset from one end to the other end of the bobbin and having a uniform low pitch with successive turns in contact from end to end, the winding having a barrel-shaped outer surface with tapered end portion.

Improvised roving bobbin stripper

Contributor No. 8461. *Textile Industries 116,* 153 (May 1952).

The roving bobbin stripper primarily consists of a set of parallel rolls driven by an electric motor. The rolls are set in an inclined position by means of hinged bearing supports. As the bobbin revolves in contact with the rolls, the remaining roving is unwound and is permitted to fall into a trough immediately under

the rolls. Many advantages are claimed in the use of the roving bobbin stripper.

Mills can now measure roll weighting accurately

Anon. *Textile World 102,* 155-156 (June 1952).

See front section.

Ring spinning machine

Norbert Hooper (to Tweedales and Smalley Limited) USP 2,590,621, March 25, 1952.

A method of building the yarn on a cop or bobbin in a ring spinning frame consisting in simultaneously moving the ring rails upwardly and the spindle rails downwardly and vice versa, thereby relatively displacing the positions of the ring and spindle with half the amount of overall movement that is ordinarily necessary and simultaneously winding the yarn on the cop or bobbin so as to cause the yarn to be wound on the cop or bobbin in a manner suitable for the type of package being produced.

Setting up spinners' job loads in a specialty mill

Contributor No. 8358. *Textile Industries 116,* 149-151 (May 1952).

It is difficult to assign work equally to the operatives at the specialty yarn mill. Unlike the average cloth mill, the specialty yarn mill is often found that on 70 frames there were 42 different counts of yarns and twists, varying from 2s hard twist to 16s filling twist. After months of study, the work load for each operative is determined on the basis of the counts and twist being used. It is claimed that this system has worked very satisfactorily.

Skewer

David N. Harvey, Jr. (to Monticello Bobbin Company) USP 2,589,545, March 18, 1952.

A skewer for use in textile processes such as spinning frames and the like, comprising an elongated body portion and an enlarged base, the base being frusto-conical and having radially disposed reinforcing ribs integral with its lower surface, the base having a downwardly projecting central portion provided with a circular bore therein extending from its upper end and stopping short of its lower end for reception of one end of the bore having the head portion of a screw of the bore having the head portion of a screw molded therein, the screw being centrally disposed relative to the bore and projecting upwardly into the bore and the body portion having a centrally disposed bore of smaller diameter than the diameter of the screw in its lower end for reception of the screw to secure the base and body portion together.

Spinning technology and practice of rayon staple

Karl Schmauder. *Faserforsch u. Textiltech. 1,* 20-28 (1950) *In German;* Brit. Cotton Ind. Res. Assoc. *32,* 360 (May 15, 1952).

The staple rayon spinning process is dealt with under the following headings: (1) fineness of fiber and staple length, and their relationship to spinning properties; (2) air-condition and moisture content of the material; (3) even feeding of the material; (4) the individual fiber and web formation; (5) parallel arrangement of the fibers and uniformity of fleece and sliver; and (6) the drafting process and the formation of the finished yarn. The relationship of staple rayon spinning to the corresponding cotton and woolen processes is considered throughout the paper.

This mill knows why its frames are stopped

Richard C. Scott, *Textile World 102,* 100-101 (June 1952).

See front section.

Twister

U. S. 2,597,015, May 20, 1952. John W. May (Deering Milliken Research Trust).

A multiple twist type of twister in which the spindle has a circumferential groove located below the flier and having a yarn deflecting rod disposed radially outward from the flier to direct broken yarn downwardly so that it wraps in the groove.

Turn rings and plumb spindles

Horace L. Pratt and Hubert R. Blume. *Textile Industries 116,* 94-98 (May 1952).

This article briefs the steps to be taken when a spinning frame nirg becaming worn. It states that considerable time is saved if plumbing the spindles and turning the rings can be scheduled for the same time. The accompanying photographs, showing in detail the steps necessary to perform the maintenance operations, are found to be helpful.

Yarn twister for spinning frames

Hugh M. Brown (to Clemson Agricultural College of South Carolina) USP 2,590,374, March 25, 1952.

In a textile machine in which a plurality of parallel strands of yarn are delivered each from a pair of delivery rolls to an individual thread guide spaced from the rolls, the combination of a twisting device for applying false twist to the strands at a point between the pairs of rolls and the thread guides, the twisting device including an endless belt arranged below the strands and extending transversely under each strand, the

belt being positioned so that the outer surface of the upper reach thereof engages each strand on the underside thereof and deflects each strand upwardly from its normal path of movement between its pair of rolls and its individual thread guide, whereby each strand is held in frictional engagement with the surface of the belt by the normal tension of the strand and false twist is applied to the strand by the rolling of the strand over the surface of the endless belt.

Winding and Spooling B 5

All-purpose guide for universal No. 50 winders

Anon. *Textile Industries 116,* 163 (May 1952).

An all-purpose guide for universal No. 50 cone winders is reported to provide the following advantages:

(1) It is easily threaded.
(2) Yarn will not jump out.
(3) An exact delivery point is provided.
(4) It winds large or small packages, tapered or straight.

Mfr: American Lava Corp.

Counting and recording apparatus

Trueman T. Rembusch and Harris P. Wolfberg, USP 2,589,432, March 18, 1952.

An article counting system features an electric solenoid mounted on rotatably mounted plate having a movable core provided with means for moving in a step-by-step manner and successively stopping rotatable receptacle for article reception.

Packaging unit

U. S. 2,597,377, May 20, 1952. Kenneth V. Robinson (Atlanta Paper Co.)

A packaging unit for rayon yarn cones which comprises a plurality of cylindrical supports extending upwardly from the base of a corrugated cardboard adapted to be folded around the cones supported on the cylinders.

Yarn Application B 9

Anti-static agent

U. S. 2,597,708, May 20, 1952. Arthur Cresswell (American Cyanamid Co.).

An anti-static agent for textiles of vinyl resins comprising an aqueous dispersion of a guanidine salt of a mono-ester of sulfuric acid with a higher fatty alcohol and a lubricant consisting of a lower alkyl ester of a long chain fatty acid.

Bonding viscose rayon and rubber

B. P. 665, 619, Dunlop Rubber Co.; *J. Soc. of Dyers & Col. 68,* 136 (April, 1952)

Better adhesion is obtained if the rayon is first coated with casein.

Cold water yarn conditioning and twistsetting machine made in several sizes

Anon. *Textile Industries 116,* 83-85 (May 1952).

A cold-water yarn conditioning and twistsetting machine now on the market is suitable for yarn on bobbins and quills or for yarn on cones or other large packages.

The "Monalit-Duplex" conditioner is of stainless steel construction and is described as "drip-proof". All sides are enclosed, and all control can be operated from the outside.

Various sizes are made to conform with the mill's individual production requirements. Mfr: Mona Industries, Inc.

Mercerization of mixed yarns

R. Schulman. *Kunstseide and Zellwolle 28,* 409-11 (1950 *In German;* Brit. Cotton Ind. Res. Assoc. *32,* 328 (April 30, 1952).

When mercerized cotton is used with an admixture of viscose rayon staple, for shirt linings, etc., the excellence of the lustre, the homogeneity and ease of coloring is noticeable. Such fibers must not, however, be treated alike. The influence of the steeping liquor is not the same on cotton and regenerated cellulose. The structure of the latter is looser, the swelling is alike but the alkalinity is different, and the degree of polymerization is lower. The ingredients of the mercerization bath, its temperature, and the length of immersion are discussed.

FABRIC PRODUCTION C

Yarn Preparation C 1

Cold swelling starch process

Clifford J. Yarber (to A. M. Meincke & Son, Inc.) USP 2,590,912, April 1, 1952.

The method of preparing a cold swelling starch which comprises mixing a starchy product with a small amount of water, introducing monosodium phosphate into the mixture and controlling the introduction whereby the mixture has a pH of from 5.2 to 6.5, and then converting under drying heat and pressure to a cold swelling starch.

Cotton and synthetic warp preparation

H. Marsden, *The Textile Weekly 49,* 1066 (April 1952).

Modern systems of warp preparation in all sections of the textile industry all over the world make use of the principle of overend yarn withdrawal from stationary warp yarn packages. For many years it has been maintained, and is still

maintained more firmly than ever, that cones are the ideal warping supply packages, not only for cotton yarn warping but also for warping all the natural and synthetic yarns used in textile manufacture. The author describes magazine-creel warping for cotton and the advantages thereof, and emphasizes practical problems such as changing counts, pattern warping, method of detecting broken ends, types of beams, and materials handling. Only minor modifications are noted in slashing. Variations in warp preparation for synthetics are covered fully.

Homogenizer handles 800 gallons per hour

Anon. *Textile Industries 116,* 186 (May 1952).

A homogenizer with a capacity of 800 gallons per hour is available with a single or two-stage valve, and all product surfaces are of stainless steel. Mfr: Cherry-Burrell Corp.

Slashing synthetic fibers

G. M. Anderson, *Textile Age,* 26-27 (June 1952).

See front section.

Ultrasonic viscosimeter for plant and laboratory use

Anon. *Textile Industries 116,* 85 (May 1952).

Continuous, automatic viscosity measurement using ultrasonics is the outstanding feature claimed for the newly developed "Ultra-Viscoson," an instrument consisting of a probe and an electronic computer which tells viscosity at a glance.

Viscosity is determined by the use of ultrasonic waves applied to the probe, the manufacturer states. The computer converts the probe output instantly into viscosity measurements on meter, recorder or controller. Mfr: Rich-Roth Laboratories.

Weaving C 2

Air filter

Oliver L. Allen (to Electrolux Corporation) USP 2,591,490, April 1, 1952.

An air filter comprising a layer of flexible compressible fibrous material, a cover sheet of flexible fabric on at least one side of the layer, the peripheral edge portion of the layer being compressed against the peripheral edge portion of the cover sheet, and a stiffening rim of set plastic material bonded to and bonding together the edge portions.

Apparatus for handling tubular textile fabrics

Samuel Cohn, Jules G. Walter, and Eugene Cohn (to Samcoe Holding Corporation) USP 2,590,938, April 1, 1952.

In an apparatus for advancing tubular textile fabric, a frame, pulleys centrally disposed in the frame each having a pair of belt receiving groves of different pitch, pulleys at opposite ends of the frames and belts connecting the centrally disposed pulleys to the pulleys at the ends of the frame, the belts at the centrally disposed pulleys being disposed in different grooves, and pairs of supporting and driving rollers engaging the centrally disposed pulleys through fabric stretched on the frame whereby the forward and rearward portions of the fabric are advanced at differential speeds.

Trouble with taffeta

Albert E. Johnson, Rayon and Synthetic Textiles, 32, 33 (May 1952).

See front section

U.S. Rubber's novel sample method

Neal Truslow. *Textile Industries 116,* 90-91 (May 1952).

Time and money are saved by a novel method of producing fabric samples at United States Rubber Company's Textile Development Department at Winnsboro, S. C. Equipment which duplicates production machinery is used to make narrow width samples. The equipment has been found sufficiently versatile to be used in the preparation of a large number of different types of fabrics. Processing problems, such as effects of sizing compounds, those involving twist settings, and excessive warp breaks, are first worked out with this model machinery. The information thus received will then be applied to the production machinery in the mill.

Warp tension compensator

Karok Kulczycki and Walter D. Lowe (to Steel and Alloy Tank Company) USP 2,589,498, March 18, 1952.

In a loom having a warp beam, a tension compensating mechanism for the warp comprising a roll over which the warp is adapted to pass in its passage from the warp beam towards the cloth being woven, an eccentric device mounted for eccentric movement about an axis, the eccentric device mounting the roll for movement therewith about the axis, and means for imparting a crank motion to the roll through the eccentric device in phase with the shed cycle to take up the slack in the warp while the shed is closing and to relieve the tension in the warp while the shed is opening.

Special Fabrics C 4

Aluminum foil utilized in fire protective clothing

Anon. *Textile Industries 116,* 114 (May 1952).

A new fabric known as "Tempex", developed in Switzerland for use in special-purpose clothing for persons exposed to extreme heat, employs the principle of heat reflection and utilizes aluminum foil as the reflecting medium. The Swiss Federal Material Testing and Experimental Institute said that Tempex gave superior protection against heat over that afforded by asbestos, and that it offered sufficient protection against radiation heat in conditions when a woolen fabric would normally be destroyed by self-ignition.

Bleachable transfer ink

Helen J. Steiner, USP 2,589,306, March 18, 1952.

A water permeable, bleachable, ink composition for coating and impregnating typewriter ribbons and carbon paper comprising a meltable wax vehicle including at least ten percent of a water dispersible wetting agent for rendering the vehicle permeable to aqueous bleaching agents, and as the sole colorant a bleachable dye homogeneously dispersed through the vehicle.

Fiber bonding

U. S. 2,597,888, May 27, 1952. Thos. H. Miller (Kaumagraph Co.).

Cut edges of textile fabrics are prevented from unraveling by applying to the edges a binding material while the cut fabrics are held in a press to prevent extensive impregnation.

Woven fabric adapted for use as upholstery covers and the like

Faylon M. Merrill (to Sackner Products, Inc.) USP 2,590,995, April 1, 1952.

A woven fabric comprising groups of rayon warp strands and groups of cotton warp strands arranged in alternating relation, and filling for woof of twisted paper interwoven with the warp strands, the filling for woof being flattened and relatively stiff and resilient as compared to the warp strands, the rayon strands being uncolored and of flattened section, each strand of the rayon groups being woven as a warp strand separate from an adjacent rayon warp strand and coacting with the filling for woof to provide lustrous checked stripes.

STANDARD FINISHING D

Automatic program controller for chlorinizers

Anon. *Textile Industries 116,* 167 (May 1952).

A simple device is available for controlling the

feed of chlorine at predetermined rates for predetermined periods in identical cyles to meet variations in chlorine demand as they may occur. Mfr: Budders-Providence, Inc.

New softening agent for cotton, rayon, acetate, nylon

Anon. *Textile Industries 116,* 159 (May 1952).

According to the manufacturer, syntho-softener C assures a durable, soft, full, mellow hand with maximum drapping qualities for all types of cotton, rayon, acetate, linen, and nylon fabrics. The softening agent will not cause mark-offs, odors, or rancidity; shows no discoloration on pressing or ageing of the goods; and will exhaust in long baths to give economical application. Mfr: Hart Products Corp.

Non-chemical water treatment process and equipment

Anon. *Textile Industries 116,* 159 (May 1952).

A water treatment process and equipment called "Hydrotron" eliminate scale in heat exchange equipment by changing water electrophysically, so that minerals contained in the water do not form a dense hard coating over heat exchange surfaces. Mfr: Heller Laboratories.

Portable viscosimeter

Anon. *Textile Industries 116,* 171 (May 1952).

A multi-speed, portable viscosimeter weighs only nine pounds and may be operated from a 6-volt car storage battery. Mfr: Geophysical Machine Works.

Scouring woolens oiled with good oleines

Contributor No. 8451. *Textile Industries 116,* 151-155 (May 1952).

The purpose of scouring woolen fabrics in the initial operations of cloth finishing is to remove the oil content and dirt. Successful finishing depends on efficient scouring. The type of scour employed depends on the oil content and the type of cloth. For woolens oiled with good oleines, the two-stage scour is recommended because there is less risk of the emulsion cracking. The procedure for the two-stage scour is given in this article.

DYEING AND PRINTING E

Automatic yarn package dyeing

Anon. *The Textile Weekly,* 1093-94 (April 18, 1952).

See front section.

Dyeing of wool with high-affinity colloidal dyestuffs and di-ammo-nium phosphate

John N. Dalton and John P. Ploubides (to Pacific Mills) USP 2,590,847, April 1, 1952.

The process for the dyeing of wool with the high affinity colloidal wool dyes which comprises forming a distinctly alkaline dye-bath by adding to water a high affinity colloidal wool dye and an amount of diammonium phosphate between about 0.1% and 0.5% of the weight of the bath and between about 2% and 6% of the weight of the wool to be dyed, wherein the high affinity colloidal wool dye is present as a dispersion, immersing the wool in the dye-bath at room temperature, heating the bath slowly below its boiling temperature for about one to one and one half hours while maintaining the pH of the bath distinctly alkaline, retaining dyestuff in dispersed form in the bath and inhibiting dyestuff fixation on the wool, whereby the wool fiber is swollen and the dyestuff particles are evenly distributed therethrough, and then bringing the bath to the boil and maintaining it at the boil as it becomes distinctly acid by the liberation of ammonia, thus causing fixation of the dyestuff particles on the wool evenly distributed therethrough.

Dyeing of cellulosic textile materials by forming lakes of basic dyes in the fibers

William Stuart Miller (to The Calico Printers' Association Limited) USP 2,589,953, March 18, 1952.

In the dyeing of cellulosic textile fibers, the process which comprises preparing an aqueous mixed solution of a basic dyestuff and a lake-forming inorganic acid with sufficient alkali present to produce a pH within the range of from 5 to 12.5 and to prevent precipation of the lake; the mixed solution being buffered sufficiently to maintain the pH within the range during application of the solution to the fiber; applying the mixed solution to the fiber to be dyed and formic acid to cause precipation of the lake within the fiber.

Dyeing acrylonitrile polymers

U. S. 2,598,120, May 27, 1952. Esther M. Griffith (E. I. duPont de Nemours and Co.).

Polymers containing 85% or more of acrylonitrile are dyed with a vat dyestuff by means of a readily ionized potassium compound such as potassium carbonate and a reducing agent.

Mill-made ultra-violet viewer

Contributor No. 8445. *Textile Industries 116,* 109 (May 1952).

A mill-made ultra-violet viewer, which has

been used to check discharge printing, is described. The device essentially consists of a cone-shaped ply-wood box, open at both ends. The small end is shaped to fit the face of an observer. On the large end 16 small Argon vapor lamps are arranged in a framework shielding the observer from direct rays.

To use the device effectively, a small quantity of a fluorescent white dye is added to the print paste. The intense fluorescence of the discharge color is visible without effect by the printer looking through the ultraviolet viewer, and the faults are at once apparent and can be remedied before more than a few yards of waste or "seconds" are made.

Method of textile printing

Erling Owren and Edward Karolczuk (to (Owren) USP 2,590,643, March 25, 1952.

The method of textile printing which comprises providing a flat surface, positioning on the surface a back-greige comprising a woven, porous, absorbent and adsorbent fabric, treating the work-contacting surface of the back-greige with a dye repellant solution in a quantity sufficient to deposit on the fibers of the fabric and leave the interstices of the fabric open for receiving and excess of a penetrating dye, positioning the cloth to be printed over the back-greige, placing a stencil pattern on the cloth to block out certain areas thereof and expose other areas in amounts sufficient to penetrate through the cloth to the other side to provide the pattern to be displayed with excess dye received by the back-greige and then removing the cloth.

Package dyeing. I. A. Theoretical model and its relation to technical practice

J. Boulton and J. Crank. *J. Soc. of Dyers and Col. 68*, 109-16 (1952).

The general problem of package dyeings outlined and a theoretical model is discussed in detail. This is the first step in an attempt to gain a fuller understanding of the basic processes operating within the package. The model is shown to lead to results which are in general agreement with observations from standard dyeing practice. The necessity of avoiding high exhaustion is confirmed by the model and it is emphasized that level dyeing is most likely to be secured by rapid flow and low exhaustion.

Printing of woolen textiles with a nonaqueous paste comprising a dyestuff containing an acid group, a water-insoluble vinyl polymer and an acid-liberating agent

Erwin Meier (to Ciba Limited) USP 2,589,951, March 18, 1952.

In a process for printing a textile structure of wool with a dyestuff containing an acid group, the improvement which consists of applying the dyestuff with the aid of a printing paste including a non-aqueous thickener containing a water-insoluble vinyl polymer and an acid liberating agent.

Synthetic printing thickeners

Monsanto Chemical Co. and R. B. Seymour. Brit. P. 663,769. *Dyer 107*, 264 (Feb. 22, 1952).

In the process outlined, the fabric is printed with a paste comprising the dye and an aqueous solution or dispersion of styrene-maleic an hydride copolymer cross-linked with divinyl benzene. The printing paste thickener is said to be effective when used in relatively small amounts.

Tendering vat dyes

G. M. Nabar. *Dyer 107*, 333 (Mar. 7, 1952).

Certain vat dyes have the property of accelerating the oxidation of cellulose by oxidizing agents and by light. Leuco compounds of vat dyes have been shown to accelerate the oxidation with this accelerated oxidation. Simpler and more consistent than slow oxidation. Studies of the measurements of reduction potentials of vat dyes on the fiber and their influence on the acceleration of the rate of oxidation of cellulose by dilute sodium hypochlorite are discussed together with the light tendering of cellulose by vat dyes.

Vat dyes on acetate

Celanese Corp. of America. Brit. P. 664,340. *Dyer 107*, 342 (Mar. 7, 1952).

A simple and convenient method is claimed for applying a wide range of vat dyes to cellulose acetate rayons so as to obtain satisfactory fastness to rubbing without substantial saponification of the cellulose acetate. The material is dyed by applying an unreduced vat dye in finely divided form, subjecting the material carrying the dye to an aqueous reducing liquor rendered alkaline with caustic soda and containing a water-miscible organic swelling agent for the cellulose ester, so as to reduce the vat dye to a leuco form and fix the latter on the material and then oxidizing.

SPECIAL FINISHING F

A heat-resistant finish

U. S. 2,597,163, May 20, 1952. Edwin B. Micaels and Samuel Machlis.

A nylon cloth is impregnated with a quinone to render it heat-resistant and particularly useful as a cover for a steam heated laundry press.

Apparatus for heat stabilizing themoplastic fabrics

Arthur P. Lewis and Chas. F. Fisk (to U. S. Rubber Co.), April 15, 1952. U. S. Pat. 2,593,320.

An apparatus for heat stabilizing thermoplastic fabrics comprising nylon warps and widely spaced wefts to prepare the nylon for rubber reinforcement, such as in tires.

Army Quartermaster Corps develop new water-repellent thread

Department of Defense Release of April 30, 1952.

See front section.

Cellulose coated fabrics

Textuff, Ltd. and W. R. Stanton. Brit. P. 644,157. *Dyer 107*, 263 (Feb. 22, 1952).

Improved machinery for coating knitted or woven fabrics with cellulose is designed to ensure complete wetting of the fabric in the viscose bath. The fabric is passed through a steam chamber into a bath containing a wetting-out solution, then into a bath containing viscose or another regeneratable cellulose solution which may also contain a dye for the fabric. The coated fabric leaves this bath through an adjustable slot, passes by means of a stenter through an acid coagulant bath, is washed free from acid in a water bath, and then passes on a second stenter through a drier. Knives then cut off the selvedges, and the finished fabric is collected as a roll. The cellulose solution may be cooled by a water jacket around the bath or by passing a brine solution through pipes within the bath. When entering this bath, the fabric may pass between two grids to keep away any bubbles formed in the bath.

Chemical modification of cotton and rayon

United States Rubber Co. Brit. P. 664,795. *Dyer 107*, 431 (Mar. 21, 1952).

Treatment of cellulosic fibers with vinyl sulfone $(CH_2{=}CH_2)SO_2$ in the presence of a basic catalyst is claimed to reduce the shrinkage of, e. g.; rayon. The treatment can be used in the manufacture of pleated or shaped fabrics, or in setting twist in yarns, since cotton or rayon fabrics which are creased and then treated take on the property of retaining the creases, and when pressed smooth and then treated tend to return to the same smooth condition after drying. Treated cellulose and rayon no longer dissolve in the usual solvents for these materials and also swell less when immersed in water or

alkali solutions. In addition, it has been found that if the fabrics are sized and treated, they are given permanent stiffness, improved hand, improved shrink resistance, and in some cases improved crease resistance. The treatment is applied to finished fabrics, either before or after dyeing, and to yarns and untwisted filaments; and it is desirable to keep the vinyl sulfone concentration as low as possible to prevent tensile deterioration.

Coated fabrics

E. I. Dupont de Nemours. Brit. P. 662, 240. *Dyer 107*, 340 (Mar 7, 1952).

An improved method of bonding chlorosulfonated polythene compositions to fabric bases includes preparing or dispersing an intimate mixture of chlorosulfonated polythene and a polymerized lower alkyl ester of acrylic or methacrylic acid in a volatile solvent, and then evaporating by heating. Preferably the polymerized ester is present in the coating composition within a range of 20 to 40 parts by weight for each 100 parts of the chlorosulfonated polythene.

Crease-resist process

American Cyanamid Co. and L. A. Fluck. Brit. P. 664,993. *Dyer 107*, 436 (Mar. 21, 1952).

A higher degree of crease resistance to cotton, especially mercerized cotton textiles, while reducing to a minimum loss in tensile strength, is claimed for this process. The materials are impregnated with water soluble, curable melamine-formaldehyde compositions, e.g., dimethylol melamine and methylated methylal melamine; and film-forming, water-insoluble, thermoplastic polymerization products, e.g., copolymers of ethyl acrylate and styrene or acrylonitrile. The two products are employed in a weight ratio corresponding to from 1 to 3 parts of the latter for each part of the former.

Crease resist process for seersucker

J. Bancroft & Sons Co. and W. R. Macintyre. Brit. P. 662,683. *Dyer 107*, 264 (Feb. 22, 1952).

A crease resist process for a variety of cotton fabrics, particularly seersucker, is said to give greater crease resistance with less in strength. The process uses a mixture of methylated and unmethylated methylol melamines and copolymerizes them on the fabric. Catalysts and softening agents may be incorporated in the solutions.

Crease-and shrink resistant treatment for rayon

U. S. 2,596,268, May 13, 1952. Hendrik W. Meijer.

Cellulosic textiles such as rayon fabrics are creaseproofed and rendered resistant to shrinkage by the chemical fixing thereon of a ureide of a methylol-ketose or a methylol-aldose.

Crease-resistant finishes for cellulosic fibers

W. Rumens. *Textile-Praxis 6,* No. 10, 743-48 (1951) *In German; Brit. Cotton Ind. Res. Assoc. 32,* 328 (April 20, 1952).

When extension occurs in cellulosic fibers, the fibrils slide past one another, there being no cross-linkage, and they are held in their new positions by van der Waal's forces. The function of urea-formaldehyde type resins in filling interfibrillar spaces and reducing the tendency to slip is described. The effect of molecular size and shape of the resin on crease-resist efficiency is examined as is the influence of the chemical nature. The process of impregnation is then treated in some detail. There are sixteen references to the literature.

Drying and shrinkage machine

U. S. 2,597,490, May 20, 1952. Alpheus O. Hurxthal (Proctor and Schwartz, Inc.)

A machine for drying and shrinking textile fabrics comprising aconveyor having foraminous basket loops into which the fabric is adapted to be loosely festooned and carried through the drier housing.

Delustering Terylene

Printers' Assoc., A. Powrie, and F. Isherwood. Brit. P. 664,921. *Dyer 107,* 339 (Mar. 7, 1952).

A process for delustering fabrics of polyethylene terephthalate, especially in certain areas only to produce a patterned effect, comprises treatment with an aqueous solution of sodium or potassium hydroxide, preferably at elevated temperatures. The outer usrface of the fiber is said to become pitted in such a manner as to scatter light. There is a slight loss in weight and strength, but not sufficient to detract from the value of the fiber.

Fabric treatment

Arnold Silver (to Betex Sales Corp.) U. S. 2,593,207, April 15, 1952.

A textile fabric having a raised embossed design and substantially permanently fast to washing and dry cleaning is produced by impregnating the fabric with a solution of N-alkoxy-

methylpolyamide resin and an acidic catalyst in an alcohol, partially drying at a temperature of 250°F. or less, embossing at 250 to 375°F., and curing at 250 to 350°F.

Fabric treatment

Robert S. Taylor (to E. I. duPont de Nemours and Co.) U. S. 2,592,763, April 15, 1952.

Chlorinated polymers of ethylene may be used to impregnate fabrics to protect them against fungi, fire and water.

Fireproofing cellulosic fabrics

Frank Ward (to Courtaulds Ltd.), Brit. P. 670,346.

A fire-resistant cellulosic material is obtained by reacting cellulose with sulphuric acid and cyanamide, baking at 160°C., impregnating with a polyvalent salt in an aqueous alcoholic solution such as calcium chloride, and drying.

Flameproofing and glowproofing compositions

USP 2,596,496 and 2,596,936-9 (Monsanto Chemical Co.)

These patents relate to the production of flameproofing and glow-proofing, compositions which comprise a resin and a water-soluble reaction product of anhydrous ammonia and phosphoryl chloride. They are particularly valuable for glowproofing phenolaldehyde and aminoplast resins and for producing intumescing coating compositions for protecting panels of wood or other materials.

Method for drying fibrous sheet material

Julien Dungler, USP 2,590,849, April 1, 1952.

The method of treating fibrous sheet material which contains an impregnating liquid and which is adapted to be moved through a substantially air-free heating enclosure; comprising the steps of impinging on spaced surface areas of the material jets of superheated steam conditioned with respect to its velocity to partly condense the superheated steam and to liberate enough latent heat therefrom on the material to thereby raise the temperature of the material to the boiling point of the liquid and to transform bound moisture within the material to vapor, which is forced by expansion within the material to the surface thereof, creating suction between the spaced surface areas to thereby draw off the vapor from the surface of the material and reheating the vapor to arrive at the condition of the superheated steam.

Method of reducing shrinkage

U. S. 2,597,529, May 20, 1952. Frank R. Redman.

Textile fabric is rendered shrink-resistant by supporting loops of the moistened fabric free of any appreciable tension, agitating to effect rippling of the fabric in each loop and drying during such agitation.

Method of coating and treating a pile fabric to set the fibers in the upstanding position

Winfield Scott Libbey (to W. S. Libbey Company) USP 2,590,713, March 25, 1952.

In a method of making a resilient and porous fibrous fabric sheet having upstanding pile fibers, the steps of; coating the fabric and the fibers with a liquid rubber coating composition, allowing the coating on the fabric fibers to partially dry to a tacky state, engaging the tip portions of the fibers with the outer continuous and tacky surface of a rotatable cylindrical roll, simultaneously rotating the roll and moving the fabric therepast so that the fibers in contact with the tacky surface move in the same direction as the surface then tangentially away therefrom to pull the fibers to substantially upstanding position relative to the fabric and to then separate the tacky surface from the fibers leaving the latter in the substantially upstanding position, thereafter passing the coated fabric and upstanding fibers through a drying some while supporting the fabric on an air cushion in the zone.

Method of and apparatus for treating tubular textile fabrics

Samuel Cohn, Jules G. Walter and Eugene Cohn (to Samcoe Holding Corporation) USP 2,589,344, March 18, 1952.

The method of treating tubular textile fabric which comprises spreading the fabric to flattened form and advancing rearward and forward portions at differential speeds so that the forward portion is relaxed and completely free from longitudinal tension, and applying steam simultaneously to the upper and lower sides of the relaxed and advancing fabric.

New finish announced by Warwick

Anon. *America's Textile Reptr. 66*, 96 (Mar. 20, 1952).

New hydrophobic resins, referred to as Noraset, are said to impart in one product and in one single textile finishing operation durable water repellence, durable spot and stain resistance, durable crush resistance, and durable shrink resistance. These resins can be applied on practically all synthetics on regular finishing plant equipment and, in addition, can give a dry, wool-like hand to rayon and rayon-blended fabrics. Fabric

porosity is said not to be affected and abrasion resistance is said to be increased 200 to 400% by use of these products. Mfg.: Sun Chemical Corp.

Quartermaster reasearch on water resistant textiles

Staff of the Harris Research Laboratory. Textile series report No. 37, 1952, 186 pp. Office of the Quartermaster General, Mimeo $5.00.

This report represents a summary of Quartermaster research in the field of water resistance of textiles carried out during World War II and in the period that immediately followed. A board program of research covering both fundamental and applied aspects of the subject was undertaken as a result of the recognized importance of protection from rainfall to the fighting efficiency of the combat soldier.

Water-and flameproofing composition

James Francis McCarthy (to Treesdale Laboratories and Textile Processing Company) USP 2,591,368, April 1, 1952.

A water- and flameproofing composition consisting of 14 per cent by weight of a water dispersion of polyvinyl chloride containing 55 per cent of polyvinyl chloride, 6.5 per cent by weight of a plasticizing agent for the polyvinyl chloride selected from the group consisting of dibutyl phthalate, dioctyl phthalate, ethyl phthayl ethyl glycollate, and methoxyethyl acetyl ricinoleate, the plasticizing agent being in the form of an aqueous emulsion containing 65% of the agent, 75.5 per cent by weight of a water dispersion of antimony oxide containing 70 per cent by weight of a 2% solution of sodium carboxymethyl cellulose and 1 per cent by weight of a 2% solution of sodium carboxymethyl cellulose and 1 per cent by weight of a 28% solution of ammonium hydroxide.

Water-repellant finish

U. S. 2,597,614, May 20, 1952. Alfred E. Brown and Arnold M. Sookne and Francis W. Minor (Harris Research Lab.).

Textile fabrics are rendered water-repellent and improved in hand, resiliency and abrasion-resistance by the application of an emulsion of silicone oil in water which is dried and cured.

X-2 treatment

Anon. *Textile Age 16*, 79 (June 1952).

Photomicrographs are presented which show the changes resulting from the X-2 treatment when applied to viscose rayon and rayon blend

fabrics. After washing, the yarns in the treated fabric remain uniform and compact and show less shrinkage.

The program included investigations of the physics of wetting; study of the effect of fabric structure and geometry on the water resistance of textile materials; investigations of the mechanism of water repellency with special emphasis on the study of treating systems and the durability of water repellant agents; study of the influence of garment design on protection from rainfall; including analysis of the double layer principle; and the development of test methods for predicting the performance of water resistant fabrics under field usage conditions.

Among the more important results of this research program was the development of a series of nozzles which duplicated natural rainfall in the three important parameters of intensity, drop size and velocity. The rain room and rain course established as a result of this development facilitated the design of a large number of fabrics of superior water resistance. Use of the rain room also permitted a more exact evaluation of the effect of structure on the resistance to penetration and absorption of textile materials. These datas led to the revision of previous concepts and the formulation of some new concepts regarding the design of water resistant materials which will probably lead to further improvements in the future. Study of factors affecting the durability of water resistant materials which will probably lead to further improvements in the future. Study of factors affecting the durability of water repellent agents has led to specific improvements in application technology and to the development of improved laundering procedures to maintain the effectiveness of the water repellent fabrics in use. Considerable progress is also noted in the design of water repellent garments. The utilization of the double layer principle and introduction of the use of water repellent thread have both led to significant improvements in the performance of water repellent garments.

While the practical developments cited in this report have been of great value in improving the over-all efficiency of water resistant materials, the fundamental investigations of the mechanism of wetting and the application of the principles of Peirce to the study of the geometry of water resistant structures is of significant importance and will form the basis for future progress in the development of water repellent agents and water resistant structures.

TESTING AND MEASUREMENT G

Instruments and instrumentation G 2

Electrostatic conductivity of textile fibers

Kurt Heide. *Faserforsch u. Textiltech. 2*, No. 10, 391-402 (1951) *In German; Brit. Cotton Ind. Res. Assoc. 32*, 408 (May 31, 1952).

The relationship of fiber condition to its conductivity is briefly considered. An apparatus and method for determining the conductivity of a fiber, treated or untreated with anitstatic agent, depends on measuring the time required for discharging a charged polymethyl-methacrylate disc to an electro-shape by means of the fiber. Several graphs are given showing rates of discharge for various fibers at various stages of treatment and on being rendered conductive by different types of anti-static agents. The method is not suitable for determining moisture content.

Fabric wear tester

Harry F. Clapham, USP 2,590,839, April 1, 1952.

A machine for testing textile material and the like, comprising a horizontal hub, means for imparting rotary motion to the hub, a rigid elongated support radially extending for the hub, a clamp at the outer terminal of the rigid elongated radial support for travel in a circular path, the clamp having a pair of reciprocable clamp jaws for holding the free ends of a folded sample or textile material with the bight of the sample protruding outwardly from the clamp, an abrasive surface spaced from the hub out of the path of the clamp and in the path of travel of the bight of the textile sample, whereby upon rotation of the hub the textile sample is impelled by centrifugal force against the abrasive surface.

Electric weighing recorder

Anon. *Textile World 102*, 140 (May 1952).

An entirely new electrical weighing system for application to existing Scott Testers of the pendulum type is announced by Scott Testers, Inc., Providence, R. I., Resistance of the specimen, or load, is absorbed by the defection of an elastic spool, which is converted to a voltage and measured by a potentiometer with recording chart. On the chart, extension of the specimen is shown vertically and load is shown horizontally. Inasmuch as chart speed and clamp speed are both time function, the chart becomes a stress-strain diagram directly, with either variable, load or extension, magnified or condensed as desired.

Measurement of fabric soiling

E. A. Leonard and Eugene W. K. Schwartz. *American Dyestuff Reporter 41,* P322-40 (May 26, 1952).

The history of publications and projects on measurements of fabric soiling is reviewed. From this history the known facts on mechanisms of fabric soiling and soil retention are summarized. Three test methods standardized by the Committee are described and examples of their applications illustrated. The test methods are designed to evaluate in a controlled way the various mechanisms by which soil may impinge upon textiles. The examples used for illustrative purposes demonstrate the importance in soil retention of fabric construction, type of fiber and type of finish.

Measurement of fiber length

Anon. *Textile Manufacturer 78,* 206-7 (March 1952).

An apparatus manufactured by A. Kershaw and Sons, Ltd. (Brit. 666,492) for measuring the fiber length of staple. One end of the fiber is held in forceps and drawn under a wire until the other end passes the wire. The wire drops down and, thru an electrical relay, stops the screw guiding the forceps in its drawing motion. Perpendicular motion of the forceps hits one of a row of keys s paced every ½ cm. thereby, registering the length of the fiber. The machine will count 50 fibers in each group.

Procedure for determining yarn irregularity

F. Tiana Ragasol. *Bull. L'Inst. Textile de Fr. 30,* 75-8 (1952) *In French.*

A new procedure is discussed for determining yarn irregularities wherein the frequency and intensity of the yarn irregularities and the degree of irregularity are stretched by means of photographs.

Stress and strain of yarns

W. Wegener. *Melliand Textilber. 33,* 338-42 (1952) *In German.*

A description of a load-extension meter designed by the author with which fatigue tests with simultaneous alternating stress can be made. The stresses thusly produced correspond to practical conditions. The results of tests performed on continuous filament Perlon give new and interesting information on the various kinds of stress which may occur.

Testing apparatus for determining bending resistance and elasticity

Walter Frenzel. *Faserforsch u. Textiltech. 1,*

109-118 (1951) *In German; Brit. Cotton Ind. Res. Assoc. 32,* 366 (May 15, 1952).

The underlying principles and modes of operation of several types of apparatus for testing bending resistance and elasticity of textile fibers, yarns and fabrics are described in some detail.

Yarn stresses during processing and their determination

Walter Frenzel. *Faserforsch u. Textiltech. 1,* 36-41 (1950) *In German; Brit. Cotton Ind. Res. Assoc. 32,* 366 (May 15, 1952).

The author describes how stresses set up in yarns during processing can be measured by the Frenzel-Hahn running yarn testing machine. The application to testing tensions on spinning, doubling, weaving and other machines is indicated.

Microscopy to the aid

J. C. Brown. *Dyer 107,* 258-60 (Feb. 22, 1952).

The techniques applied to fiber identification and the study of fiber damage are reviewed with the use of microscopy by the dyer and finisher discussed.

TEXTILE MILLS H

A material handling short-hand

Anon. *Modern Materials Handling,* 58 (June 1952).

The article illustrates a group of abbreviations that could become universally known and used. They were originated by Colonel John Day, of Ga. Tech, and represent a good start towards a complete set of abbreviations to be used anywhere, to describe any handling situation. They have the advantage of simplicity. They are used for flow diagrams, charts, reports, method standardization, and cost record.

Alabama textile convention

Staff. *Textile Industries 116,* 104-105 (May 1952).

At the convention, cautious optimism was expressed. One speaker emphasized that most observers agreed the liquidation of surplus inventories at the retail level has probably been completed, which is one of the most important conditions to recovery in the primary markets. Another speaker urged that the manufacturers and the leaders in the communities to exercise good judgment and cooperate with each other.

Air conditioning of mills spurs production and efficiency

James Marshall. *America's Textile Reptr. 66,*

9-10, 52 (Mar. 27, 1952).

Air conditioning in textile mills is aimed at increasing production, improving the product, protecting the property, and improving working conditions. These items can sometimes be accomplished by conditioning systems using one, or several, or all of the following air conditioning components: heating, humidifying, refrigeration, ventilating, filtering, distributing and controlling equipment; and although air conditioning is costly, the savings through efficiency and reduction of seconds makes its installation worth consideration. A step-by-step plan for choosing the proper installation is described.

Balance agriculture with industry

Eugene Miller. *Textile Bulletin,* 67 (April 1952).

See front section.

Fuel saving in the mill

C. T. Wade. *Dyer 107,* 327-8 (Mar. 7, 1952).

In this summary of a paper on fuel economy in textile mills, steam utilization problems are discussed and the importance of efficient steam utilization in obtaining fuel efficiency is stressed.

Bugaboo of the third shift decried at Georgia meeting

Anon. *Textile Bulletin,* 59 (May 1952).

See front section.

Getting production

Anon. *Textile Industries 116,* 120-121 (May 1952).

This article states that getting maximum production is not through the old pressure system, but through many systems some of which the foreman can not control, i.e., the age and suitability of the machinery, heating, lighting, and air-conditioning; the pay scale and living conditions of the employees; and the kind of fibers being processed. However, there are many factors which the foreman can do to increase production; and they are as the follows:

1. Keeping machinery in good state of repair and properly lubricated.
2. Training new workers and keeping old operatives familiar with the latest methods.
3. Cooperating with the other departments, both production and staff, to assure a steady flow of the best possible quality material into and from one's own department.
4. Having inspiring personality.

(This article is to be continued).

Hints on motor maintenance

Anon. *Textile Industries 116,* 127-129 (May 1952).

Four well-known symptoms of motor trouble, their causes, and suggestions for maintenance procedure are outlined. The four symptoms are these:

1. Motor does not turn over and is quiet.
2. Motor does not turn over, but growls or is noisy.
3. Motor does turn over, but will not get up to speed.
4. Motor gets up to speed, but runs too hot.

Oil-fired boilers advantageous

Staff. *Textile Industries 116,* 114-117 (May 1952).

It was found in an intermittent tricot finishing operation that much fuel was wasted as resulted from using coal-stoked boilers to meet a varying demand for steam. The remedy for such the waste was the conversion to oil firing. A considerable saving was reported resulting from using oil instead of coal.

Pressure-sensitive tapes in textiles

Norman P. Hickok. *Textile Industries 116,* 106-108 (May 1952).

Pressure-sensitive tapes are actually self-sealing tapes that stick to dry surfaces with a touch, or by the application of pressure, without having to be moistened. Imaginative use of tape has been saving time and materials in the textile industry.

Several cases where money was saved from using tapes were cited. A list of the many uses for tapes was also given in this article. Although the use of tapes is extensive, very few persons possess accurate information on how to use the tapes most effectively. Tips on the selection of a tape were described. Usually the selection should be made with regard to the tape's tensile strength, tear resistance, flexibility, elongation, purity, hardness, strength, and the conditions to which the taped part will be subjected in the future.

Power in textile plants is more than incidental item

W. Lehrbach. *America's Textile Reptr. 66,* 47-50 (Apr. 10, 1952).

The economical supply of steam and power is a most important factor in the textile industry, and excellent economic and operating results have been obtained by power plant modernization. There are many types of steam generating units, and a discussion is given of some

of the factors that go into the design of steam generating units which may be utilized by the textile industry.

Saco-Lowell is moving force in major textile machinery advances

Anon. *America's Textile Reptr. 66,* 31-4, 61 (Apr. 3, 1952).

The history of the Saco-Lowell Co., which had its beginning in 1813 with the establishment of the Boston Mfg. Co., is reviewed. The developments by the Saco-Lowell shops which have aided in the advance of the textile industry are also described.

Systematic cleaning of lamps, fixtures

Anon. *Textile Industries 116,* 112-114 (May 1952).

Using the systematic light cleaning program reduced the cost of cleaning lamps and fixtures to one-third of the former expense; improved to eon-third of the former expense; improved candle power throughout the plant; and relieved the department heads of a non-productive job.

Through time studies, a 3-man crew on the job of cleaning was found to be most efficient for a particular mill. This crew kept the plant within the recommended candle power for textile operations on plain white goods as actually determined by taking light meter readings. A schedule for cleaning was well tabulated in this article.

Synthetics-cotton battle boon to cloth research

Douglas Pidgeon. *N. Y. Journal of Commerce* (Feb. 26, 1952).

See front section.

Unique system for recording maintenance data

Douglas G. Hart. *Textile Industries 116,* 118-20 (April 952).

See front section.

Wool's battle with the synthetics

Anon. *Fortune,* 128-32, 144, 147-8, 152 (May, 1952).

See front section.

CHEMISTRY AND PHYSICS OF TEXTILE MATERIALS I

Aerodynamic properties of screens and fabrics

S. F. Hoerner, *Textile Res. J. 22,* 274-80 (1952).

General rules for the pressure loss of flow across wire screens and simple fabrics are devired herein from the available test data. At higher Reynolds numbers the results obtained

agree satisfactorily with the Borda-Carnot theory, which considers the dynamic losses to be due to a sudden expansion of the cross section behind the openings of an obstacle. On the other hand, at very low Reynolds numbers the pressure loss seems to be proportional to the velocity, corresponding to the Hagen-Poiseuille kind of flow. In the intermediate range of the Reynolds number the loss coefficient is found by statistical analysis to be a function of this number and the solidity ratio of the material.

Centrifuge studies. Part II.

Lars A. Welo, Hilda M. Ziifle and Allan W. McDonald, *Textile Res. J. 22,* 261 (1952).

In an effort to develop a simple and rapid means of measuring swelling capacities in water of cotton and other fibers in mass, the centrifuge technique has been subjected to a rather extensive study. In this technique the swelling capacity appears as a function of the moisture retention after swelling and centrifuging.

Many previous workers have employed the centrifuge empirically for the removal of external, nonswelling water from fibers, but under conditions which have varied greatly as to time and intensity of centrifuging. In the present work, the complication of dealing with the two variables of time and speed of centrifuging simultaneously has been circumvented by noting that straight lines (to a high degree of approximation) were obtained when the moisture regains of the sample were plotted against the squares of the rotational speeds. The intercept of these straight lines on the moisture regain axis was characteristic for a given fiber in a given physical form. The intercept values were shown to be the same and reproducible for any selected centrifuging time of 20 min. or more, provided the minimum acceleration was above 3,200 g.

It was found that the zero-speed intercepts on the moisture regain axis, while highly reproducible, did not represent true swelling capacities. That the intercept values were too large was shown by the sizable intercepts obtained with glass fibers, which obviously are incapable of swelling.

It was found that the excess moisture retentions could be reduced considerably in samples "oriented" so that the axis of the yarns or cords lay parallel to the direction of centrifugal force. Still further reductions occurred on cutting such "oritented" samples after centrifuging and determining the moisture regains of the cut lengths nearest the centrifuge axis.

Degradation of cellulose by solutions of sodium chlorite in an acid medium

F. Kocher. *Bull. L'Inst. of Textile de Fr. 31,* 19-7 (1952) *In French.*

The structural modification of cellulose by chlorite oxidation is discused and the concn. is determined for the temperature and pH used, at which the chlorite solutions begin to attack the cellulose.

Determination of water in textiles

A. Garin. *Bull. L'Inst. Textile de France 30,* 13-34 (1952) *In French.*

A study of the general factors which can influence the precision of determinations of water in textile materials. The three improved methods considered are the evaporation method, the azeotropic method, and the method using Fischer's reaction.

Dynamic modulus of elasticity of regenerated cellulose fibers

H. DeVries. *J. of Appl. Scientific Research 2,* 111-24 (1952).

The dynamic modulus of elasticity of regenerated cellulose fibers is traced in its dependence on the spinning stretch and the dry extension of a great number of samples. Two yield ranges in terms of extension of the fiber are distinguished. The structural changes involved are briefly discussed.

Lubricating conditioning, and antistatic agents

B. P. 664,415, *J. Soc. of Dyers and Col. 68,* 127 (April 1952).

A mixture of a mineral oil, castor oil, a nuclear - alkylated phenol, a long - chain aliphatic acid, hydroxyalkylamine, and the product, obtained by treating a long-chain aliphatic acid, a vegetable oil, and a mineral oil with H_2SO_4, neutralizing with alkali and a hydroxyalkylamine, desalting, and dehydrating, is especially suitable for use on acetate rayon.

Photochemical degradation of dull finish viscose rayon

Ch. Pinte and Paul Roachas. *Bull. L'Inst. Textile de Fr. 31,* 9-17 (1952) *In French.*

Exposure to light of samples of dull finish viscose rayon immersed in water causes intensive chemical degradation of the material. This is due to photochemical oxidation, catalyzed by titanium oxide, developing at the expense of the atmospheric oxygen or dissolved oxygen and under the effect of the adjacent ultraviolet rays, and activated by the chlorine or similar agents present as traces in ordinary water. The development of deterioration is prevented by the destruction of the traces of chlorine in the immersion water, either by distillation on potassium or by the addition of a reducing agent.

Some observations of the wetting of greige cotton

R. E. Wolfrom and A. C. Nuessle, *Textile Res. J. 22,* 246-53.

In a study of the effect of temperature on Draves wetting time, it has been shown that most wetting agents follow a typical curve characterized by decreased wetting time up to about 140°F (60°C), an increase to a peak near 185°F (85°C), followed by a sharp drop as the solution approaches the boil. With soap and a few other surfactants the curve levels off after the initial decrease so that there is no peak; but here, too, there is a marked drop beyond 185°F. The peak occurs at approximately the melting point of the cotton wax; it would appear that once the wax is completely melted, the skein will sink very rapidly in any surfactant solution. Thus, the reversal at 185°F is a property of the skein itself, and not of the wetting agent.

A study of wet pickup by cotton fabrics padded through solutions of a wetting agent has revealed that: (1) pickup of absorbent fabrics is not enhanced by the use of wetting agent; (2) pickup of non-absorbent fabrics, such as greige cotton, increases with amount of wetting agent, leveling off only at concentrations considerably in excess of normal use and far above the range of the Draves test; (3) pickup can be effectively increased at normal concentrations of wetting agent (0.02% to 0.1%) by means of multiple padding, or by increasing either the immersion time or the lag time between dip and nip.

Sweling capacities of fibers in water

Lars A. Welo, Hilda M. Ziifle and Leopold Loeb, *Textile Res. J. 22,* 254-60 (1952).

Swelling in water is one of the important fundamental properties of cellulosic fibers, and is also a factor in determining the proper fiber for a specific utilization. An example of this is the selection of cottons for self-sealing fabrics. Since existing techniques for measuring swelling capacities, as they have been used, are tedious and time-consuming, it was desired to find a rapid method which would be sensitive enough to establish, with certainty, small differences in swelling capacity due to variety, conditions of growth, and state of maturity such as might be decisive in the choice of a cotton for an application dependent upon swelling. In Part I of this study a method is discussed for determining swelling

capacities of cotton and other fibers. It is based on the measurement of the rate of loss of moisture from a moisture-saturated sample. Experimentally, this method is exceedingly simple — the fiber samples, fully swollen and containing excess water, are dried very slowly and weighed periodically. It is shown that for a time the moisture is lost at a nearly constant rate. Eventually, however, the drying rate changes and thereafter steadily diminishes. It is believed that this change occurs only after all nonswelling water external to the fiber has evaporated. The moisture regain at this point of transition in the desiccation rate is considered to be indicative of the maximum water-holding capacity of the cellulose—i.e., the swelling capacity. The moisture regain values determined are in general agreement with the regain values estimated from absorption isotherms at 100% relative humidity. The maximum regain values from the desiccation rate technique, when expressed in terms of volume increases, agree with the swelling capacities as determined by microscopic measurements.

Although the experimental method is simple and direct and more rapid than microscopic methods, the long drying periods required make it suitable mainly for use in research when time is not an important consideration.

The action of alkali and acid on cellulose

Albert Schaeffer. *Textil-Rund. 6,* 489-98 (1951) *In German; Brit. Cotton Ind. Res. Assoc. 32,* 339 (March 1952).

The damaging effect of atmospheric oxygen dissolved in the liquor has been examined and it has been found that this oxygen is the major cause of reduction in degree of polymerization and tear strength of cellulose materials during alkaline treatment. It is essential, however, that "oxygen-carriers" should be present. It is essential, however, that "oxygen-carriers" should be present. Metal salts such as those of copper or iron acting as agents have a highly efficient protective action. The chemical nature of the action is discussed.

Viscosity measurements

Julia H. Crow and Carol M. Conrad, *Textile Industries 116,* 110, 111 (May 1952).

See front section.

TEXTILE EDUCATION AND RESEARCH J

Effect of moisture studied on cottons

Anon. *Textile Age,* 34-35 (June 1952).

When water evaporates from cotton cloth, a brown line is often observed at the boundary between the wet and dry areas. Recent studies at the National Bureau of Standards indicate that this "brown-line effect" may contribute significantly to the degradation of cotton during production, processing, and use. From the data, it appears that continuous evaporation of water at the boundary line causes the cellulose in the cloth to oxidize at ordinary temperatures, with consequent weakening of the material. These results were obtained by H. Bogaty, K. S. Campbell, and W. D. Appel of the NBS textile laboratory in an experimental investigation of the effects of moisture and ozone on cotton textiles.

For further details, see some observations on the evaporation of water from cellulose, by Herman Bogaty, Kenneth S. Campbell, and William D. Appel, Textile Research Journal 22, 75 (1952); and the oxidation of cellulose by ozone in small concentrations, by the same authors, Textile Research Journal 22, 81 (1952).

Review of Textile Research and Development during 1951

Richard Steele and Corneil Messler. *Textile Res. J. 22,* 293 (1952).

This paper is a review of the literature published during 1951 in the field of textile science and technology. The material reviewed in this paper includes publications in the fields of pure and applied research, as well as in development, and has been selected from the scientific and technical journals published in the United States and abroad and from certain standard abstract journals.

Quality control conference

Staff. *Textile Industries 116,* 131-136 (May 1952).

The Textile Quality Control Association held a successful conference at Georgia Tech on April 3-4. Mill representatives from Canada to Texas attended the sessions and heard ten speakers expound the practical aspects of several phases of textile quality control. The topics discussed at the meeting are the following:

1. Significance of quality control
2. Applied statistical quality control
3. Quality control from customer's viewpoint
4. Tar spots and quality control
5. Application of fiber fineness to quality control
6. Abrasion resistance measurements and quality control
7. Effect of moisture on capacities type evenness testers
8. High speed vs. low speed operation of Uster.

8

Textile Highlights of the Mont

Textile Reader's Digest

A SMALL YARN MILL CUT LABOR COSTS 33%

Danville Yarn Mill, Bon Air, Ala., has reduced its over-all labor costs 32.88%.

In 1949, the mill produced cotton yarns at an average labor cost of 11.77¢ per lb. Between that time and now, wage increases amounting to 23% have been given; but today the mill's labor cost for producing a pound of yarn averages 9.72¢, based on the same yarn numbers.

"We worked the mill over from one end to the other," Manager Clifford L. Hall said. "In the last four years, we've either replaced or reworked every machine we had."

The accompanying pictures show something of what Danville Yarn Mills is now like physically.

The mill is 43 years old. During that time—and including the textile-slump year 1951-52—it has not run any short time. Its carded hosiery yarns, ranging from 8s through 26s, are sold on the open market in competition with sales-yarn mills all over the country.

"One reason for our success," Mr. Hall said, "is our size. We find that to be a good size for economical operation. We can keep our jobs laid out and our production balanced so that we don't have the losses and production a big mill can't avoid.

"Another advantage of that size is that supervision is more efficient and more effective. In big mills, supervisors have so much responsibility that they can't possibly keep their eyes on all important details."

Danville Yarn Mills is owned by Danville Knitting Mills, Danville, Va., of which C. B. Conway is president. Management of the mill is carried out on the spot by the men directly responsible for production. For example, during the 4-yr. modernization program just completed, selection and purchase of the machinery, equipment, and services were made by the resident management of the mill with the full cooperation of Mr. Conway. Operating and policy decisions are also made by Mr. Hall and the key men assisting him.

Located in the rolling foothills of an agricultural area, Danville Yarn Mills followed personnel practices formulated to accomplish two purposes: (1) to operate the mill efficiently, and (2) to permit workers to retain as far as possible their generations-old small-farmer independence and customs.

The mill has a small village to house some of its workers; but most of the employees live on plots of forty-acres-and-a-house rented from the company for$200 a year or on small farms they own or rent independently of the company. The result is that the community has an agricultural-industry, rather than a strickly industrial, atmosphere.

Practically every employee, from top man Cliff Hall on down, is a native of the area. The majority of the workers have never worked anywhere else, or been employed in another mill.

Wages are a little higher than the going wage levels in the area, and a share of the benefits of labor-cost reductions is passed on to the workers.

For example; one change made in the modernization program was to increase the spinning traverse from 7½ in. to 9 in. The larger spinning package cut down on the creeling required to keep the Foster winders running, and 14 winder tenders wound the same amount of yarn 21 tenders had wound before. The displaced winder tenders were given other jobs, and 25% of the labor costs saved by the traverse was passed on to the workers in the form of a wage raise.

P. M. Thomas. *Textile World*, page 87-89 (August, 1952).

COTTON BREEDER RESEARCH SAVES MILLIONS FOR MILLS

More and more the South's cotton farmers are giving the manufacturers a helping hand by producing needed varieties. The cotton breeders are devoting more and more attention to improving fiber and milling properties.

The breeders—and cotton breeding in the United States is only about 50 years old—are constantly striving to produce varieties which give high yields, moderate to high disease resistance, good boll and lint characteristics, and an increase in fiber tensile strength.

Helping to offset mounting labor and production costs, growers are increasing their income each year by many millions of dollars in each of the rain-grown cotton States by producing the kinds of cotton in demand and cotton

with longer staple fiber—which bring premium prices.

Just about every State in the Eastern cotton belt has seen in recent years the development or organlzation of one-variety cotton growing community contests or five-acre cotton improvement contests—both designed to produce a better quality of cotton and seed. They are set up by the agricultural extension services, with various segments of the industry co-operating or furnishing cash prizes.

Extension service officials in Alabama recently figured that Alabama growers, for instance, received about $14 million more in 1951 because of their higher yield and better cotton. For the last several years more than 90 per cent of Alabama's cotton crop has been of one inch or longer staple, and about 85 per cent of the crop is planted to three varieties, compared with numerous varieties a decade ago.

Every year in Alabama there are prizes awarded to the State and district champions. This year the Sardis One Variety Cotton Community copped the $2,000 State prize with Coker's 100 WR. The prize money, a total of $4,000, is put up by the Alabama Cotton Manufacturers Association and the Alabama-Florida Cottonseed Products Association.

A similar contest is conducted each year in Georgia.

While in recent years the culture of cotton has moved westward, the Southeast still produces about as much cotton as it did a couple of decades ago—before the advent of the boll weevil—and it is better cotton and produced on far less acreage than formerly. Cotton authorities cite the growth of the single variety communities—in which farmers of a given area grow the same variety to prevent field crossing and mixing at the gin, and also to permit mills to know where they can buy a certain variety—as one of the most signficant developments of recent years.

Other developmens, of course, include a significant improvement in the tensile strength of the cotton fiber itself, and constant research which has produced new varities of the cotton plant which are not only bred to meet mill requirements but also to resist insect and weather damage.

California, which this year produced a crop of over 1.7 million bales to become the second largest cotton State, has long had a compulsory State one-variety law and only Acala cotton is grown. California is a part of the irrigated cotton belt and the great bulk of the crop is now mechanically produced.

What long ago was achieved in California by law has now been achieved in South Carolina, and to a slightly lesser degree in North Carolina, by voluntary and educational means. South Carolina now can truly be called the one-variety State of the rain-grown cotton belt.

The Clemson College extension service reports that in 1951 approximately 98 per cent of the total cotton production in South Carolina was of one variety, Coker 100 WR. North Carolina uses the same variety, and with a one-variety performance almost as good. But the thing to which extension specialists point with pride is the record in South Carolina as to uniformity of length.

According to the Cotton Branch of the Production and Marketing Administration, U. S. Department of Agriculture, in its report of Nov. 21, 1951, which gives the quality reports for South Carolina ginnings through Nov. 13, just about all—or 99.7 per cent—of the South Carolina crop was one inch or longer. The extension service says no State in the rain-grown belt has such a record of uniformity of staple length. (*Journel of Commerce*, May 19, 1952, page 19.)

VARIABLE-SPEED INTERMEDIATE FEED IMPROVES CARD ROVING

The scientific principles of quality control applied to woolen carding have resulted in an improvement in product quality of nearly 100% at Bigelow-Sanford Carpet Co., Thompsonville, Conn. In the application of these principles, a new principle of carding and the design of an inexpensive attachment for this machine have also been achieved. This attachment makes possible the manufacture of textile yarns with uniformity previously unattainable. The device is readily adaptable to woolen cards and is being made available under license by Bigelow to both Davis & Furber Machine Co., North Andover, Mass., and Whitin Machine Works, Whitinsville, Mass.

In considering the quality aspects of any process, one looks primarily for uniformity. The quality characteristic of greatest importance in the carding process is the density, or weight per unit length. Since the weight characteristic of the yarn is determined by the card and since excessive variation in weight can result in fabrics of unsatisfactory quality, it is imperative that this variation be kept to an absolute minimum.

By "absolute minimum" is meant variation due only to pure chance. For well over 100

years, it has been recognized and accepted that the weight of woolen yarns varies widely. However, the extent to which chance causes affect variation has never been accurately determined, and considerable study must be devoted to answering the question, "How much variation is inherent in the process and how much variation is due to causes that can be corrected and controlled?" Such a study has been conducted on the carding process at the Thompsonville (Conn.) Plant of Bigelow-Sanford Carpet Co., largest carpet-manufacturing plant in the U. S.

In conducting a study of this sort, perhaps the best approach is to define how the process is currently running. This is accomplished simply by allowing the machine to run without adjustment, and measuring enough samples of its product so that an analysis may be made.

The results of this study indicated that the operation of the intermediate feed was causing a certain stretching of the drawing as it was deposited at the sides of the feed table. Therefore, it seemed logical to overcome this stretching by driving the traveller at a slower speed as it approached the sides and at an accelerated speed as it moved past the middle. This variation in speed would deposit more wool on the sides and less in the middle. The variable-speed mechanism for carding apparatus (otherwise known as the Traveller-Speed-Control Device, patents pending), has been developed to serve this function. This device works on an eccentric-gear principle, and is controllable through a wide range, giving it flexibility to handle all machine conditions and types of stock.

The use of this device has resulted in a reduction in roving variation of approximately 50%. It would be unnecessary to describe in detail the advantages of this increased uniformity both from a product and a cost point of view. (*Textile World*, July, 1952, page 105-107.)

PROPER GINNING CAN REDUCE NEPS 25%

Proper ginning procedures can reduce neps in the cotton card room by more than 25 per cent, Walter Regnery, president, Joanna Cotton mills Co., Joanna, S. C., asserted at the 43d Annual Convention of the Southern Textile Association here this weekend.

Mr. Regnery disclosed the findings of the recent "Seventeen-mill Test on Ginning Procedures." Spinners have claimed that while the grade is improved by new ginning practices, the cotton is damaged to the extent that spinning performance and quality of the finished products are adversely affected, he reported.

Independent mill tests have shown that the quality, or spinning value, of the cotton is affected in ways that are not easily detected by the usual cotton classing techniques, he continues. In certain of the mill tests, sampling and ginning procedures were not sufficiently controlled to isolate the causes of the damage. (*Daily News Record*, June 16, 1952, page 23)

NEW ROVING FRAME

A roving drafting element for long staple synthetics and wools or blends of both has just been developed and patented, Robert M. Jones, vice-president of Saco-Lowell Shops, Biddeford, Me., told the weekend meeting here of the Southern Textile association.

The Biddeford Textile machinery manufacturer developed the machine for flexibility in handling a wide range of synthetic fibers, Mr. Jones observed. The range of the roving drafting unit is from 1½ inches up to 6 inches in length, he disclosed. This means it is practical for a full range of the wool fibers used in the worsted industry and all types of blends, he said.

The machine is called the F5 roving frame. On the F5, the diameter of the front roll is 1 15/16 inches and the ratch may be varied from 3 1/16 inches to 9 inches. "On this machine we have an arrangement of rolls employing an apron and an apron bar, with a middle top roll which recesses the apron, similar to Shaw, and affords control over the fibers during drafting," Mr. Jones explained.

Control is not at one point, as with slip rolls, but is over a length of the fibers, he said. The amount of control is governed by the amount that the middle top roll depresses the apron. The amount of depression, and thus the amount of control, is adjusted by changing the distance between the apron bar and the middle bottom roll.

In running nylon, Mr. Jones pointed out, it is usually desirable to use a minimum amount of depression and to keep the control well back on the tail ends of the fibers. Therefore, on the new machine, it is possible to move this control so that it can be run with its minimum or maximum depression right up close behind the front rolls or way back to the back rolls.

The middle bottom roll is in short sections which runs only from roll stand to roll stand, and this should facilitate replacement of aprons, Mr. Jones said. The actual driving roll is the roll at the bottom which is continuous from one end of the frame to the other and is really more of a shaft than it is a roll. (*Daily News Record*, June 16, 1952, page 24)

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ARMED FORCES REAP BENEFITS OF SOUTHERN RESEARCH LABORATORY

A recent product of SRRL research which is now being made commercially for the Armed Forces is a new type of cotton bandage, obtained through a mercerizing process without tension. This bandage, which has had recent satisfactory tests in Army hospitals and field stations in Korea, is readily adaptable to irregular contours of the body. This conformity makes it especially suitable for bandaging use on joints, such as elbows, knees and fingers where a close-fitting, but flexible bandage is necessary.

Work being done for the Quartermaster Corps is flame-proofing of cotton, which is well under way. The acetylated cotton involves chemical treatment which improves resistance to heat and rot, and research on this project has reached the stage where several commercial companies are experimenting with the process.

Besides the Army, this heat-resistant cotton will be invaluable to laundries for use as pressing machine covers, and commercially for use in bagging and other products where the fabric is subject to rot.

Mills are showing considerable interest in current research being done at the Southern Laboratory on fineness, which, when completed, will indicate differentiation between length and fineness of the fiber, and will obtain correlation between fiber yarn and fiber properties for end uses. This information will serve the breeders and the manufacturers as well.

A new study now under way at the lab has developed a technique whereby it is possible for the first time to determine the nature of the primary wall of the cotton fiber. The scientists found that most of the properties which are valuable are in the core, and that the primary wall will come loose from the core in fluff if the fiber is immersed in a little water in a blender.

Several machines of value to the cotton industry have been developed recently at the laboratory, including a loom attachment for weaving high-pickage cotton fabrics. This device enables a standard textile loom to weave abnormally dense fabrics and also it can be used to improve the appearance and strength of conventional fabrics.

The new attachment produces more "cover" in a fabric by having less tension on one-shed layer than on the other as the lay beats up, thereby allowing the loom to insert more filling yarns per inch than could be achieved otherwise. (*Daily News Record*, June 16, 1952, page 26)

AN ELECTRONIC HIGH SPEED WARPING MACHINE

Over three years ago, Crowther design engineers first tackled the problems which resulted from the use of old warping machines. They then set out to produce a warper which would allow tension, speed and beam density to be under strict automatic control from empty to full beam. This period of experiment and research has resulted in the introduction of the *Crowther Electronic High-Speed Warping Machine*, which incorporates an application of electronics, believed to be unique throughout the world. In achieving what are believed to be perfect sectional warp beams, this machine also incorporates many new advantages which, together, insure high-speed, quality production, with the simple operation.

Outstanding features of the machine are as follows:

(a) **Warping speeds**—from 0 to 800 yards per minute, infinitely variable. Speeds can be maintained within the accurate limits of 1%.

(b) **Clutchless control**—a smooth start is obtained by the electronic current-limiting arrangement which makes *snatch* on the yarn quite impossible, even with an inexperienced operator.

(c) **Beam sizes**—Up to 21½-in. overall width and 14-in. flange diameter. A further model is available for warping beams with flanges up to 24-in. diameter. (*Skinner's Silk & Rayon Record*, page 461, April, 1952.)

RESEARCH LEADING TO EXPANSION

Research in the cotton textile and synthetic fiber fields today is resulting in importantly new markets both inside and outside the region and laying the groundwork for thousands of additional jobs.

Millions of dollars have been invested in new and expanded research facilities since World War II.

Plant rehabilitation, installation of new machinery and adoption of the latest scientific methods are listed as major reasons why the textile industry is looking Southward today as never before.

Capital commitments and expenditures, covering renovation, modernization and expansion, for cotton and rayon mills in 1951 are estimated at approximately $470 million, the bulk of it in the South.

Textile research has had an especially notable impact in creating new and expanded markets

and opening up new jobs in Alabama, Georgia, Tennessee and the Carolinas.

Laboratories in these States today are concerning themselves with virtually the entire scope of textile manufacturing activities. Numerous new independent laboratories have been established in these States in the last few years, mills have expanded their own facilities or established new ones and educational institutions and Government agencies have stepped up sharply their textile research programs.

There have been striking developments, too, in the field of the synthetic fiber industry in the South—once feared as a damaging competitor of the region's important cotton textile industry but being viewed increasingly today as an ally in extending cotton's uses and markets.

Dr. Frank J. Soday, research director of the Chemstrand Corp., at Decatur, Ala., reports that more than half of the chemical industry's initial plant expansion in 1951—amounting to $600 million and covered by Government certificates of necessity—will be located in the South. Total capital expenditures for the chemical industry in 1951 are estimated at more than $4 billion with the South obtaining a large share.

The continuing movement of the synthetic fiber industry into this region will, Dr. Soday says, "materially broaden the base of chemical manufacturing in the South" and create new markets for every basic chemical.

Today about 70 per cent of rayon production capacity is in the South, notably in Virginia, Tennessee, Georgia and the Carolinas.

These three industries—cotton textiles, synthetics and chemicals—can work together to improve the position of each.

In Decatur, Chemstrand is investing more than $50 million in a plant to manufacture a new product which was developed from reseasch—and the corporation will employ in that Alabama city more persons in its research department than in production.

It is possible to give no more than a brief indication of how the research arms of various industries and of other organizations and institutions are working to provide tremendous benefits to the entire textile industry in this region.

The Institute of Textile Technology in Charlottesville, Va., has handled more than 300 projects for the textile industry during the year.

Studies have been made on both natural and synthetic fibers at Clemson College in South Carolina. The Industrial Research Institute at the University of Chattanooga does work on cotton textiles, and the University of Tennessee at

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Knoxville has a Fiber Research Laboratory.

Typical of the textile plants which have outstanding resarch facilities in Alabama is the West Point Mfg. Co., which has established a new laboratory in Shawmut, Ala.

Some of the outstanding textile research jobs in Georgia are being done at the research division of Callaway Mills at LaGrange; the research department of the Celanese Corp. of America at Rome, and the Central Development Department of the Textile Division of U. S. Rubber Co. at Hogansville.

Many South Carolina mills maintain fine research facilities, a few of them being the Graniteville Co. in Graniteville, Pacific Mills at Lyman, Deering Milliken at Pendleton and U. S. Rubber Co.'s Textile Division at Winnsboro.

In North Carolina, extensive research is carried out by Kendall Mills at Paw Creek, Burlington Mills Corp. at Greensboro, Mooresville.

In Tennessee, research programs are carried on at Dixie Mercerizing Co. in Chattanooga, American Bemberg Mills, Inc., at Elizabethton, North American Rayon Corp. at Elizabethton and E. I. duPont de Nemours & Co., Inc., at Old Hickory, among others. (*Journal of Commerce*, May 19, 1952.)

MAYBE IT WON'T HAPPEN IN THE SOUTH

In September, 1951, on this page we published an editorial entitled "It Can Happen in the South." The editorial warned that conditions that have made New England unfavorable for the textile industry could be repeated in the South and outlined a four-point program to help safeguard Southern mills against those conditions.

We are pleased to report that specific action—some of it new, some of it not new—is evident along the four lines of activity discussed in that editorial. In the hope that more mills and associated organizations—not only in the South, but also in every other area where the textile industry is located—will originate individual action or join in group action, we review here those four points and briefly summarize some of the things now being done.

Point No. 1 was Political Action. This statement was made: "If all textile workers were alert voters and all mills saw that their employees understood the issues at stake in every election, the textile industry would be in a favorable position in local and state politics."

Last week (at the time of this writing) we saw a cotton mill in the South taking positive steps to get its 1,200 employees registered to vote. Many workers—young, middle age, and elderly—who had never registered nor cast a vote were being given time off from their jobs and provided transportation to the registration office. When voting time comes, this mill will be in a position to influence by suggestion 1,200 votes—a signficant force in most local elections.

An unexpected by-product of this action by the mill was the boost it gave worker morale. We talked with a few of the workers who had registered, most of them for the first time in their lives. A spark of excitement was evident in them. They were pleased that the company was interested in them, and they had an unusual interest in politics.

Point No. 2 of the editorial was Labor Action. This statement was made: "Ways must be found to preserve a labor force that has vigor and competitive spirit, that appreciates advancing technology, and that takes a realistic view toward workloads and pay."

Of course, there is no magic formula for labor relations. The whole burden rests on mill management, and fortunately management attitudes are steadily improving and better labor-relations tools are being adopted. Among them are:

Aptitude and psychological tests that help personnel departments place workers in jobs most suitable to them.

Profit-sharing plans that impress the idea of partnership on workers.

Flexible workloads that change from day to day, as work runs good or bad, to keep actual work constant.

Wage raises based entirely on savings made by better machinery or methods.

Point No. 3 was Public Action. The heart of this point was: "Towns, countries, and states should be cultivated and educated for a new outlook on industry. A mill is just not a business. It is an institution that contributes mightily to the life and activity of a community, state, and region."

One impressive thing being done in the Spartanburg-Greenville-Anderson area of South Carolina is a program of mill tours by the State Legislature. Started, we think, by the Spartan Mills group in Spartanburg, these tours are aimed at giving every South Carolina legislator a first-hand knowledge of mills, workers, conditions, etc.

Perhaps the most sucessful tours we have ever attended are the Spring tours at Avondale Mills in Alabama. By far the most impressive

feature of these tours is the enthusiastic participation by workers

Vastly more could be profitably done throughout the industry by mills dramatically demonstrating what and how they contribute to the life of their communities.

Point No. 4 of the September editorial was Management and Plant Action. The gist of this point was: "A continuing educational program by a staff of experts should be carried on to encourage constant plant modernization and management improvement."

The most significant new thing along this line that we know of is a technical society just organized for the purpose of providing a shirt-sleeve round table for experts in management and production techniques. No publicity can be given this society. Membership is by invitation, and meetings are held behind closed doors so that specific management problems can be freely discussed.

These various activities are not organized in any central way. As you can readily see, they are sparked by individual mills or groups. The important thing is that broad constructive steps are being taken. We hope that in the months ahead we shall see more abundant evidence of serious mill participation in healthy business climate for the textile industry. (*Textile World*, July, 1952, page 4.)

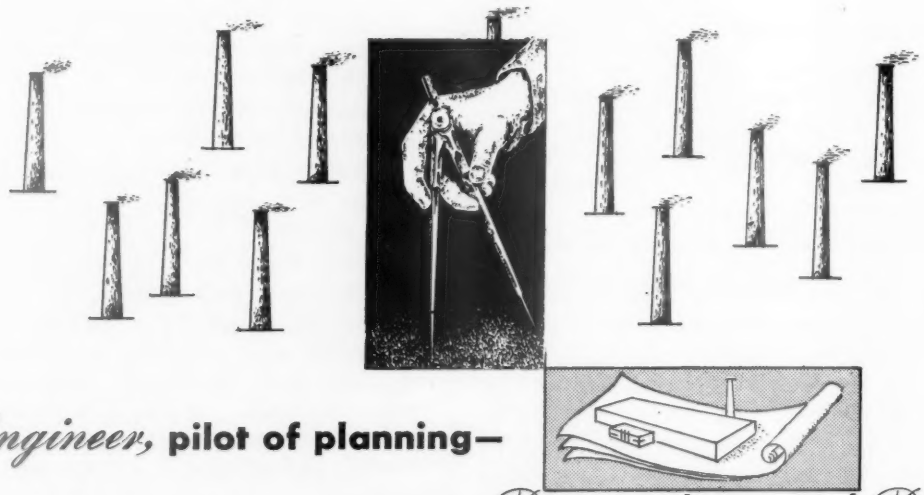
GOOD PERSONNEL

The fine equipment now in place in the textile industry means that the main competitive advantage left to mills is in the field of personnel, J. L. Delany, retiring president of the Southern Textile Association, observed at the group's 43d annual convention.

"Since we are all—or nearly all—of the same starting basis as far as plant goes—we have to look elsewhere for our margin of superiority," Mr. Delany continued.

"It can only be gained by the personnel of one's mill. Stated another way, it plainly means that man and not machine is still the dominant factor of success. It means that a group pulling harmoniously together as a team will be hard to beat.

"We all want to cut costs, to improve quality, to make money. Sometimes adversity will develop a lot of ideas that will pull our plants in the profit direction.



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"Adversity though, doesn't always work, as a good many of us have seen. We must strive to turn it to good use. A man can study books, magazines and pamphlets that will give him a certain amount of stimulus, he can take college grade correspondence courses which certainly will develop his mind. He can attend group meetings at which he will meet men in his line of work. This will give him access to thoughts lighting up ideas already dormant in his mind," continued Mr. Delany.

"My theme for this meeting, then, is how to use our personnel to best advantage to build up a team of top-notch workers, alert to every opportunity to improve themselves and the way they run their jobs.

"We must develop the team spirit. Respecting the worth of each individual and expect the best effort of each individual if we are to succeed in our ambition which is to have "the most expert superintendents and overseers in the textile industry," Mr. Delaney concluded. (*Daily News Record*, June 16, 1952, page 23.)

COMMENTS ON THE RESULTS OF THE 17-MILL TEST ON GINNING PROCEDURES

Very important to the textile industry is the report recently published by the National Cotton Council giving the results from actual mill tests of spinning and weaving of cotton ginned under five different conditions in order to ascertain what ginning procedures are preferable. I urge the reader to get the full report. Here I shall give some observations which show the importance of this report to the industry.

"Mechanization of the cotton industry has been accelerated, due in part to a shortage of labor. These rapid changes have increased the problems of gin machinery manufacturers and the cotton mills, as well as those of the farmer. Mechanical harvesting is one of the most important time and labor-saving developments in the cotton industry, and yet, from its use, a number of serious difficulties, both to the ginners and spinners, have arisen. Mechanically harvested and snapped cotton contains a much greater proportion of leaf and stem fragments than hand-picked cotton from the same fields, and is correspondingly harder to clean. Ginners are, therefore, confronted with the problem of removing the excess trash without damaging the fibers. Moisture is added to the cotton picked by spindle type pickers and shortgage of labor frequently results in a poor quality of handpicking. To meet this need, new types of cleaners and new ginning techniques have been developed.

"Cotton gins were, until mechanical harvesting was introduced, simple plants. Dryers were added to facilitate cleaning, and additional cleaning equipment was added to improve ginning performance. More recently, lint cleaners were added to extract trash from the ginned lint.

"Many spinners have claimed that while the grade is improved by these new ginning practices, the cotton is damaged to the extent that spinning performances and quality of the finished products are adversely affected. Independent mill tests have indicated that the quality, or spinning value, of the cotton is affected in ways that are not easily detected by the usual cotton classing techniques. In certain of these mill tests, sampling and ginning procedures were not sufficently controlled to isolate the causes of the damage.

"The USDA reported improved grades without damage to the cotton when its experimental lint cleaner was used in combination with a limited amount of seed cotton cleaning machines. For all of the USDA experiments, there was an average increase of 2 neps per 100 square inches of card web, which was interpreted to be insignificant. The USDA studies, however, were done on a small scale and were more closely controlled than in commercial gins; therefore, comparable results on commercially operated gins were deemed necessary. The small increase of 2 neps/100 square inches of card web may be important in the manufacture of certain fabrics, even though statistically it was not considered to be significant. The pressure of above average neps in the card web and below average yarn appearance grades are indications of difficulties to be expected in dyeing and finishing the fabric.

"The USDA tests showed further that a fast rate of feed combined with the saw-cylinder lint cleaner produced a substancial increase in the number of neps per 100 square inches of card web. It was concluded that rapid feeding of the cotton in combination with excessive drying and overhead cleaning not only lowered the spinning quality of the cotton, but failed to improve the grade.

"A study was undertaken, therefore, to investigate on a commercial scale the effects of the use of certain ginning machines and variations in ginning operations on the spinnability of the cotton and the quality of the finished product. Representatives of each branch of the cotton industry, with the cooperation of interested governmental agencies and gin machinery manufacturers, set up this experiment to supplement the previous tests by commercial mills and the

USDA. The cooperators in this present test are listed elsewhere in this report. The National Cotton Council acted as a liaison for the entire group and with the aid of the American Cotton Manufacturers Institute, Inc., served as a clearing house for assembling the data. The report was written with the aid of the Technical Sub-Committee.[1]

"This report presents the results obtained from a large scale investigation of the effects of various mechanical operations and practices in cotton gins upon the spinning characteristics of the fiber and upon the quality of the finished fabric. The tests were carried out under commercial production methods in six gins, two each of three makes, and in 17 mills in which a great variety of equipment was used. The ginning tests were carried out in two main areas of the Cotton Belt, and in each area three pickings were made, one being hand-picked and the other two harvested by spindle type pickers, for each of the three makes of gins. Enough blended seed cotton was secured at each gin to produce 25 bales of lint cotton. At each gin five test runs of five bales each were made in accordance with the following schedule:

1. Without modification of the usual practice, so-called "Normal" ginning.
2. As in (1) except at a faster rate.
3. As in (1) except the overhead cleaners were by-passed.
4. As in (1) except the lint cleaners were by-passed.
5. As in (1) except at a higher temperature."[1]

I believe graph 1 shows the signficant results of this test. To a print cloth mill, neps are one of the most important quality factors in their finished cloth. It is a factor that many times is responsible for cotton cloth losing its place in the market to synthetic fibers. Any improvement here, then, to any segment of the overall cotton producing or manufacturing organizations should definitely help either to hold the present market or increase the consumption of cotton. You will note on graph 1 two plots of nep results from these tests, one showing neps in dyed cloth, the other, neps in the mill card web, all of which results were made by one man at the USDA Laboratory.

Test four, where the lint cleaners were by-passed or where the cotton received the least amount of maching at the gin, gave a marked reduction in neps at the mill. In the case of the neps in card web, the count was reduced from 102 for normal to 76 in test four, a reduction of 25.5 percent or from 96 in test 5 with excessive drying to 76, a reduction of 20.8 percent. The neps in the finished cloth were reduced to 96 in test 4 from 105 in test 1 (or 8.6 percent) and from 115 in test five to 96 (or 16.5 percent). In other words, the tests show that a reduction in neps of 25.5 percent in the card web or 16.5 percent in the finished cloth can be made at the mill level by gin procedure.

The reduction of 25 percent in the card nep count is very important to all concerned in our industry, and this improvement would be most difficult to get in any other way. For the mill to get this reduction, they would have to card at a slower rate. The average carding rate for the 17 mills was 9.5 pounds per hour. To reduce the nep count 25 percent would estimate, from tests that have been run in carding rate vs neps, that this would have to be reduced to 7 pounds per hour. In the case of a 100,000 spindle print mill this would mean the addition of 80 cards, with an investment cost of $320,000. These extra cards would cost the mill about $25,000 in additional direct labor cost per year to operate. In other words, the ginners should use great caution in either over-dying or overmachining the cotton,

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as it well might add so much to mill costs or add so many neps to the finished product that cotton will be replaced by synthetic fabrics.

The graph on ends down on spinning shows the same result as that of neps. These figures, too, are very significant to the spinner and therefore should be well noted by the ginner. Thirty-eight ends down, as shown for test 4, is about the maximum the spinner can have and still maintain his operative work load. Any higher than this would require a smaller work assignment or a lowering of the spinning production to bring the ends down back to standard. Either of these changes would result in higher manufacturing costs, making cotton less competitive with other fibers. Forty-nine ends down, as was the average for test 5, would require the change to be made.

The test also showed that overdrying and maximum machining at the gin resulted in lower yarn strength, as well as lower cloth strength. The amount of this difference was small, but the results were all consistent from mill to mill. The strongest yarn and cloth were made from test 4 cotton.

The average grade from test 4 came out 92.1, or SLM—, whereas the grade from test 5 was 95.4, or SLM+. On today's market, test 4 cotton would have a value of 38.80 cents[2] and test 5 a value of 43 cents[2] per pound. The waste at the mill for tests 4 and 5 ran 11.53 cents and 10.20 cents, respectively. From these figures we can calculate the cotton cost on 100 pounds of finished cloth as follows:

Test 4

Cotton	111.5 lbs. at 38.40	(2)	$43.26
Waste salvage	11.5 lbs. at 20¢		2.30
Net cotton cost 100 No.			$40.96

Test 5

110.2 lbs. at 43.00	(2)	$47.39
10.2 lbs. at 20¢		2.04
		$45.35

From the above we see that it would cost the mill 4.39 cents pound less to produce cloth from test 4 than from test 5. This cloth would be stronger and would have 16.5 percent fewer neps. The lowest grade cotton gave the best and cheapest cloth.

The ginner has been adding machinery to his equipment in order to produce cleaner cotton that will come out with a better grade. The cotton farmer takes his seed cotton to the gin that he feels will give him the best sample of ginned lint. We have seen from this extensive test by actual mill runs that blindly following this procedure might hurt everyone. The farmer and ginner might well lose the market to synthetic fibers. The mill will get a poorer raw material which will either turn out an inferior product or one that has a higher unit cost.

This cooperative test, involving all segments of the industry, has clearly demonstrated a dangerous trend in ginning procedure. It proves that the new additional machinery being added to the gin must be operated with great care and skill to prevent real damage to the cotton fiber. The test has clearly defined the problem.

I believe the true cooperative spirit that exists between the farmer, ginner, and spinner can put these facts to good use and make cotton into a better product, better able to compete with synthetic fibers. If these facts are not used, cotton will be in a dangerous position.

(1) "Cotton Fiber Properties, Spinning Efficiency and Quality as Affected by Ginning Practices." Burt Johnson N.C.C.

(2) Based on Anderson-Clayton Company quotation, Delta Cotton landed group B mill point, March 10, 1952, May Spots at 40 cents.

(Walter Regnery. *The Bobbin & Beaker,* Spring issue 1951-1952, pages 6, 7, 16.)

BRUCK MILLS INSTALLS FIBER CONDITIONING

New updraft pickers, the first to be installed for commercial production in any mill, are introduced as part of a"fiber conditioning" system in the spun yarn division of Bruck Mills, Ltd., which was formally opened here.

The company has spent some $700,000 on entirely new equipment in the division plus another $600,000 on construction of the 56,000-square-foot, one-floor windowless building which adjoins the Sherbrooke weaving plant with which it is integrated.

Most new equipment in the spun yarn division, with the notable exception of 30 cards from Platt Bros., Ltd., England, has been supplied by Whittin Machine Works, Whitinsville, Mass., who also engineered the plant layout.

Whitin developed the new "fiber conditioning" system, which is the expression they prefer to use instead of the usual blending, opening and picking, but details are not being disclosed at this time. They also supplied the drawing, roving, spinning and twisting machinery. Robert J. McConnell, vice-president, together with Harold Heathcote, from the sales department, and M. W. Keeler, Northern agent, all came to Sherbrooke for the opening.

In the blending operation, after ageing in bins, the fiber is taken out and put through two more blending machines, then blown into new bins where it is distributed by a Truslow blender. Whitin N3 blenders are used.

The new updraft picker known as Model T has been in operation since February. (It is understood that Du Pont has one in its control laboratory at Wilmington, Del., but these at Bruck's are the only ones in commercial operation today). The machine, it is stated, is holding within three-tenths of an ounce, as against the normal three-fifths of an ounce, with no split laps and nary a hole in the lap either. As a result of this system whereby all fibers are conditioned before being machined, there likewise has not been a yard of streaky goods produced to date, according to the mill management.

Installed also in the mill are 12 drawing frames, Whittin model L2, breaker and finisher types. They are equipped with roller bearing metallic top rolls.

Six Whitin roving frames are equipped with standard superdraft drafting arrangement. There are three lines of rolls. Top rolls are ball-bearing, requiring no oiling.

There are 24 spinning frames Whitin model F2, each with 240 spindles, and equipped with umbrella creels. They have been running 15 ends down per thousand spindles as per hour, in various blends.

Whitin machinery in subsequent operations included nine BJ (trap) twisters equipped with overend draw creels. Other equipment noted are toto-coners from Universal Winding Co., and crown slashers made by Tower Iron Works, Providence, R. I. (*Daily News Record*, June 16, 1952, page 26.)

VACATIONS BRING REST AND ZEST TO MILL TOWNS

Here it is summertime, again: fast time, slow time, and vacation time! Every mill community is rife with plans for fun. Some are for local fun—just loafing, fishing, gardening, and enjoying the lazy summer days. Others are for young fun, Girl Scouts, Camp-Fire Girls, and Boy Scout camps. And every week from some textile communities bus-loads of happy vacationers are off to the holiday places where they may get a new view, forget the hum-drum work-a-day life in a change of tempo and scenery.

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During the recent years of profitable operations many textile mills invested in vacation sites for their employees. Now, when operations are being curtailed, workers have more time available and want to spend as many days as possible resting and enjoying these facilities in anticipation of longer work days in the autumn.

Camp Helen, on the beautiful Gulf of Mexico, provided by Avondale Mills for its employees, is a spot anyone would be privileged to visit. Comfortable cottages, well-kept surroundings, fishing schooners, and an open-air recreation center for music and dancing are there for those who want it. About 400 people can be accommodated at a time, and trips for the families and friends of the mill's employees cost approximately $1.00 a day, everything included, except transportation. Many have cars, but for those who go by bus the round trip is $1.80 extra expense.

Springmaid Beach, owned and operated by Springs Cotton Mills for its employees, adjoins the State Park at Myrtle Beach, S. C. The clubhouse and cafeteria accommodate 400 people. Cottages are already completed for 120 and will eventually accommodate nearly 500. A 620-ft. pier adjoins the 1,000-ft. beach frontage. Expenses for a vacation are nominal, about one-tenth the average cost at any resort hotel in the area.

Many other similar spots entice the textile-mill worker when vacation time comes around. But another type of vacation becoming increasingly popular combines city-tour, sight-seeing, and educational recreation. By bus, these planned tours for textile employees head for the big towns, and especially for the nations capital. In Washington is a wealth of things to see and do. The usual course is the round of government buildings and historic shrines. But textile tourists from textile communities find a specialty list for them in offerings of the several museums. Two of the latter are internationally known in textile circles, and in them we trace textile history and its beginning back many thousands of years.

The Textile Museum of D. C., founded by George Hewitt Myers, who is its president, is a "free enterprise" project, the result of one man's hobby and interest. The museum itself is an integral part of the Myers' beautiful home on S St., connected by passageways. The president, who is also curator of textiles, Gallery of Fine Arts, Yale University, and a member of Smithsonian Fine Arts Commission, has spent much of his life and a great deal of money collecting the Turkish, Persian, Cairene, and Chinese rugs and tapestries which through the museum he shares with the public.

In the sprawling, ugly red-brick Smithsonian Museum, Arts and Industries Building, is a collection of the old and the new, each with its story of purposeful research and great attainment in textiles. There one may examine the miniature models of Richard Arkwright's spinning machine built in 1767, and James Hargreaves "Jenny" of 1770. One may gaze in awe at the original spinning frame built in America by Samuel Slater in 1790, and its mate, Slater's carding machine, and know that from those two crude but wonderful mechanisms America's great textile industry was born. There too is a cotton gin, a tiny thing, built by Eli Whitney before 1800. There is a throstle spinning frame and a twister built at Merrimac Co. in 1822 when New England's industry was in its early beginnings. There is a spin-ginner used on a Southern plantation in 1840. Cotton was dropped in one end of the machine, and the fiber ginned from the seed, carded and spun into yarn in one operation. There, too, is the first ring spinning machine, presented by Draper Corp.

Nearby is William Crompton's original patent model of 1858 which tripled production. They are compared with the new Crompton & Knowles six-color automatic gingham loom in use today. We see the first Jacquard machines to be used in America in 1820, less than 20 years after its invention by the French weaver. Other more intricate machines, the Groeblin Automat, of 1883, the first embroidery jacquard and the first Universal winder invented by the same man; Wardwell's automatic braider for electric wire covering, and various cloth-cutting, trimming, and other devices show the march of progress and productivity. (*Textile World,* July, 1952, page 133-188.)

COTTON STANDARDS CHANGES RAPPED BY TEXTILE MILLS

The cotton textile industry today assailed Secretary of Agriculture Brannan's decision to revise government cotton standards downward without first gaining approval of United States manufacturers, who use two-thirds of all cotton produced in the country each year.

The American Cotton Manufacturers Institute made public a joint request by eight textile associations that Secretary Brannan delay promulgation of revised standards pending a conference at which representatives of all domestic

and foreign groups who buy, sell or ship cotton could seek mutual approval.

He ignored the request, however, as the new standards were issued August 12 and are scheduled to become effective with the start of the 1953 crop year.

The standards are biscuit-shaped batches of cotton arranged in boxes, for use in grade testing of samples from bales when fiber is bought. A master set is kept under lock and key in Washington while other official sets are used throughout the world to guide buyers and sellers alike in cotton transactions that run into billions of dollars annually.

Confusion caused by repeated changes in standards will disrupt marketing processes and add one more burden to the cotton farmer's "best customer," the textile men's letter said, pointing out that the domestic textile industry buys $2 billion worth of American-grown cotton every year.

"Every action by any group of breeders, producers, ginners, merchants, the government or anyone else, that adversely affects the manufacturer of cotton textiles, is bound to do one thing: play into the hands of cotton's competition," the letter warned.

Calling attention to changes in cotton buying methods following previous decisions of the Agriculture Department to change the standards, as well as the rapid growth in mill use of the new man-made fibers, the letter said:

"It is high time for all whose interests lie in cotton to face the facts and realize that what has happened during the emergence of the synthetics could not be but a prologue to an era of bitter fiber competition. Agriculture and its servants in the government must face up to this challenge. In the light of these realties, it is incredible that a department of government representing the cotton producer should contemplate action that would have injurious effects on the producer's major market."

That market can "very well suffer injury" if the American spinners "continue to find the door closed whenever changes in cotton standards are proposed," the statement went on.

The manufacturers, represented by an interassociation committee which drew up the letter, hinted that continuance of the present policy might force mills to adopt other buying practices and gradually abandon the use of government standards.

Beginning in 1946, the manufacturers said, the Department of Agriculture has veered from an established policy of encouraging all interested groups to exchange views and take active part in setting up, maintaining or revising the standards. Instead, they charged, the government seems fixed on a course of making its own decisions on modifying the standards, without benefit of advice from all major segments of the trade.

They underlined the mills' paramount interest in cotton, the fact that quality is a dominant factor in successful manufacture of products which must sell in today's highly competitive market.

When the Department of Agriculture "bypasses" the mills, it fails in its basic mission to serve the cotton farmer, it does injury to the standards program and does not help advance the cause of cotton as a competitive fiber, the statement brought out. Standards that lack approval by a group whose operations are keyed to cotton quality are for the most part meaningless, the letter explained.

Warning of a "gradual loss of confidence in the Universal Cotton Standards," the letter said "a lessening of confidence is certain to come from a situation where the world would be forced to trade on the Department of Agriculture's arbitrary conception of grades, instead of on standards set up and mutually approved by those whose businesses and very lives are identified with cotton."

The textile men added that "confidence will certainly dwindle if, in following its present course, the Department of Agriculture gives no voice or insufficient voice to the American cotton manufacturing industry, while at the same time using persuasion with groups in other signatory countries to gain approval of the Department's actions."

The U. S. manufacturers added a protest against the present voting system when changes in standards are considered. Under the present system manufacturing and shipping interests of foreign countries are given 50 per cent of the total vote, the Department of Agriculture controls the other 50 per cent, while American mills are allowed no voting power at all. They continued:

"Neither the farmer, the textile manufacturer, nor the civilian or military user of textile products can afford to watch with complacency any attempt to lower raw cotton standards. Standards are simply the means of measuring quality. They are the yardsticks of measurement when cotton is bought and sold.

"A practice of repeatedly revising cotton standards to match crop changes strikes us as a dangerous expedient. By the same token, for

the sake of convenience a federal agency might just as well decree that yardsticks be shortened to 35 inches or stretched to 37. The results would be nearly as confusing.

"To the American manufacturers, consumers of the greater part of the cotton crop, the Department of Agriculture's stand is impossible to comprehend, when standards are merely means of quality measurement. No standards can ever exactly match a crop, attempts to juggle them notwithstanding.

"Lowered standards cannot diminish the desirability of a good bale of cotton any more than they can lower the quality in any product." (Textile Information Service.)

$40,000 SOLVES DYEHOUSE WASTE-DISPOSAL PROBLEM

A$40,000 waste-disposal system just installed in a Pawtucket, R. I., rayon dyehouse is handling 55,000 gal. of waste per 16-hr. day. The nature of the wastes is as follows:

400 to 500 lb. of caustic.
200 to 400 lb. of sodium chloride.
2 to 4 lb. of sodium sulfide.
10 lb. of sulfuric acid.
10 lb. of nitrate of soda.
100 lb. of soap and detergents.
A small amount of phosphate used for water softening.

The dyehouse has 10 dye vats that are dumped at least 10 times in 16 hr.

The $40,000 cost of this installation included preparation of the trench bed, mains, pumps, meters, etc.

Like all pollution-abatement systems, this system had to be tailored to existing conditions. The dyehouse, owned by Main Realty Co. is located immediately below a river dam. Dyehouse wastes that always had been dumped directly into the river had to be collected in the plant, lifted to a trunk line, and pumped to a State-owned disposal plant.

Until 1925, the dam was used to furnish water to operate water wheels in the mill; but power generated by this means proved unprofitable, and the water wheels were abandoned. Over the years the trench, 12 ft. square in cross section, had silted to a depth of about 6 ft. The water flowed in a direction opposite to that which any collector line for waste could flow and still be within reasonable distance of the trunk sewer already built by the State to receive industrial wastes. Therefore, the trench from the dam into the plant was of little use as it was.

Our problem of moving the mill wastes to the trunk line could have been easily solved if this trench could have been used as a collector line. Sufficient pitch could be obtained, but to build a wet well and pump all wastes to the trunk sewer through 600 ft. of force main and a lift of 90 ft. was too costly. However, to abandon the trench completely would also be extremely expensive.

Therefore, it was decided that a collector line and wet well would be built in the trench to collect all the wastes from the dyein machines and sanitary equipment. Vitrified clay pipe was used as the collector line because of its resistance to acids and other dyehouse wastes.

The collector line dumps the wastes into the wet well; and from there, two 500-gal. per min. pumps force the wastes through an 8-in. vetrified clay pipe force main to the trunk sewer 35 ft. above the collector main.

The collector main is about 350 ft. long and is constructed of 12 and 15-in. vitrified clay pipe. It is laid at a 1% grade and is capable of delivering at the rate of 2-million gal. a day. Located in the old water trench just below the floor of the dyehouse, it is supported every 12 ft. of its length by a 4-in. H-beam pedestal extending some 9 or 10 ft. above the bottom of the trench. Each pedestel has a side brace for additional support.

On top of the pedestals are two 6-in. steel beams with a steel cradle every 3 ft. that fits the outside diameter of the vitrified clay pipe. Every other section of pipe has a 12-in. T opening on the upper side to receive the vahious wastes from the line above.

The T fittings not in use and manholes on the line act as overflows in case the pipe gets clogged. All overflows pass out to the river by the trench.

The joints of the clay pipe are caulked with two strands of oakum and then filled with lexonite compound flush with the outside of the bell. A sturdy collar reinforced with wire mesh is placed over each joint.

The wet well was constructed of the lower end of the pipeline in the trench, with a 12-in. wall between it and the two 500-gal.-per-min. pumps. All wastes are pumped to the trunk sewer through a 4-in. Venturi meter and 8-in. force main. Automatic recorders indicate rate of flow and record waste discharge.

Clarence F. Lamb, *Textile World*, page 118, 218, 220 (August, 1952).

SLASHER DRYER USING GAS DEVELOPED AT SRRL

Engineers of the Southern Regional Research Laboratory's textile-processing research division in New Orleans, La., have designed, constructed,

and operated an experimental slasher that uses a gas-fired, infrared drying unit to process warps on a pilot-plant scale—warps 21 in. wide by 300 to 600 yd. long. Infrared drying was adopted on the premise that cotton yarn will not be damaged by exposure to intense heat so long as the yarn is saturated with water. Gas was selected as the fuel because of its ready availability, high thermal efficiency, and ease of control.

The dryer is an elongated, double-walled structure, in longitudinal cross-section very much like a smoker's pipe. The portion corresponding to the bowl is 6 ft. high and houses the gas-fired, radiant burners. Four burners are mounted, in staggered relationship, on opposite walls of the housing and are adjustable to move inwardly and outwardly to provide control over the intensity of the infrared radiation reaching the warp.

One wall of the "bowl" is hinged and swings outward to give access to the interior for threading up the warp and for repairing any yarn breaks that might occur during operation. The two burners mounted on this wall are fed by means of flexible metal hoses.

A 15-ft.-long inclined chamber, corresponding to the stem of the "pipe," connects with the lower end of the bowl and terminates at the opposite outlet end in a short vertical run leading to an exhaust duct.

The burner system operates as follows: Air from a 1-lb. pressure blower brings zero-pressure gas into proportioning Venturi mixers, and the combustible mixture of air and gas is burned under pressure upon a refractory surface. The refractory is heated to incandescence, to about 2300° F., and releases as infrared rays a large portion of the total heat generated. These rays are absorbed by the wet warp, and immediately the temperature of the size on the warp is raised to the boiling point. The warp then enters the convection-drying chamber, where drying is completed by the hot, gaseous combustion products being drawn through the exhaust chamber.

This system has proved efficient and trouble-free during several years of operation at SRRL.

Since the atmosphere within the dryer is composed principally of combustion products of the air-gas mixture fed to the burners, the warp is heated in a medium of relatively low oxygen and moisture content and is not subjected to the deterioration from oxidation ordinarily expected in the presence of a high relative humidity.

Openings around each burner and at the top of the radiant section are provided with adjustable covers for controlling the amount of outside air entering the driver. By regulation of this air and the air-gas ratio of the fuel mixture, an oxidizing, neutral, or reducing atmosphere may be maintained within the dryer.

The burners are ignited electrically, and a protective system automatically shuts off the gas in case of flame failure. An electrical interlock between the burner controls and the drive system causes the burners to be turned down for slow-speed operation of the slasher and turned off completely when the "stop" button is pressed.

The design of the dryer enables air temperatures as high as 700° F. to be maintained within the radiant heating chamber as long as the wet warp is not present. When drying warps, the air temperature usually reaches a maximum of 350° F. The inner walls of the convection-drying chamber fit rather closely to the warp so as to get high air velocities without large blower installation. No unequal heating effects from side-wall radiation have been observed.

The provisions for controlling the intensity and penetrability of the infrared radiation and the hot-air velocity make the dryer particularly adaptable to the drying of surface coatings. Heating can be so rapid that surface coatings can be dried or cured without materially affecting the underlying base.

Anon. *Textile World,* page 143, 144 (August, 1952).

AUTOMATIC START-STOP CONTROLLER

Everett J. Spencer, who operates a small weaving mill at Rockford, N. C., has invented an "automatic start-stop controller" which he claims can be applied to slasher, winding machines, looms and knitting machines.

Mr. Spencer outlines the operation of his device as follows:

When a yarn end breaks or a spool or cone runs out of yarn or the thread becomes slack, a red pilot lamp lights up and the machine stops. The operator goes back into the creel section and repairs the broken end, replaces the empty cones or takes up the slack in the thread.

Then, without returning to the the control panel, the red pilot lamp lights up, and the machine automatically starts running again.

This invention eliminates the necessity of the operator walking back to the control panel to restart the beamer-warper after mending each loose yarn end or making the other necessary repairs.

The controller operates through a relay switching mechanism that is fireproof and shockproof, Mr. Spencer claims.

Anon. *Textile Buletin,* page 106-107 (July, 1952).

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